Proceedings of
MaritimeAlaska '84

The Second Conference on Maritime Commerce and Port Development

November 26-29, 1984
Anchorage, Alaska

Alaska Sea Grant Report 85-1
March 1985

Proceedings of MaritimeAlaska '84

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Alaska Sea Grant Report 85-1

March 1985

US Army Corps of Engineers
Alaska District

ACKNOWLEDGEMENTS

The success of this conference was due to the efforts and cooperation of the following individuals and agencies, to whom we extend our thanks:

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This publication has been compiled, edited and printed by the University of Alaska Sea Grant College Program under contract from the Alaska Department of Transportation and Public Facilities.

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INTRODUCTION

The Department of Transportation and Public Facilities, assisted by the Alaska Department of Commerce and Economic Development, the U.S. Coast Guard, the U.S. Army Corps of Engineers, and the U.S. Maritime Administration, planned the Maritime Alaska '84 conference. The conference provided an update on marine transportation and port development since 1981 and state-of-the-knowledge reports on innovative technology, the status of services to rural areas, and the impact of existing regulations. In addition to these presentations, five workshop sessions were held enabling all conference attendees to provide their points of view.

This is the proceedings document of the Maritime Alaska '84 conference. It contains all the plenary session presentations and summaries of all the workshop sessions.

Welcome

WELCOMING REMARKS

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I would like to extend a welcome to all attendees and presentors at this Maritime Alaska '84 conference. This is the second in a series of conferences sponsored by the Alaska Department of Transportation and Public Facilities, Alaska Department of Commerce and Economic Development, U.S. Army Corps of Engineers, U.S. Coast Guard, and the U.S. Maritime Administration. The first conference was convened in 1981 as a result of the department's commencing a comprehensive statewide study of its port facilities and of the role played by rural ports in the state's transportation infrastructure. During the course of the study efforts, it was realized that a large percentage of the ports in Alaska had been developed through private initiative and investment. With much of the interest and substantial investments in ports coming from non-public-sector agencies, it was felt to be in the state's interest to continue to support the private sector's initiatives by convening conferences of this sort to review the ideas, suggestions, and projections of all parties.

Since the 1981 conference, the first phase of the department's port planning efforts has been completed. This initial look at the state's port facilities outlined the level of maritime commerce, projected future needs, and established a framework for the state for policy decisions affecting ports. Now that the first phase of the study is complete, the time has come for the state to develop programs and make policy decisions within that framework. This Maritime Alaska '84 conference will be the start of that program development and policy decision-making effort.

Update

AN OVERVIEW OF ALASKA TRANSPORTATION - A SHIPPER'S VIEWPOINT

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HISTORICAL OVERVIEW

To understand where we are and where we are going, we must look back at what has happened to change transportation in Alaska over the last 25 years. There were only the Alaska Steamship Company and a handful of very small competitors 25 years ago. Virtually all traffic moved in breakbulk lots on Alaska Steam, with some small containers. The average shipment was only about 1,200 lb. Service was to virtually every port, large and small, except Anchorage. Service was slow and much passenger travel was by combination freight and passenger ships.

Except for some changes precipitated by the Alaska earthquake and a modest development of piggyback, the Alaska Railroad was essentially the same as it is today. Airline service was severely limited by a Civil Aeronautics Board that restricted routes, rates, and services. The only highway travel to and from Alaska was via the Alcan Highway, and that involved very high costs and difficult problems with service.

Now let's look how shippers in 1984 can move freight within Alaska and between the Lower 48 and Alaska. The options available are incredible. When I did the research work to develop the Alaska Shippers Guide, published by Alaska Northwest Publishing Co., which also publishes Alaska Magazine, I studied more than 500 points receiving freight in Alaska and the companies servicing those points in Alaska as well as the Puget Sound area and other points in the nation. The multitude of choices a shipper has today and the carriers' competitiveness for his business is truly astonishing. We have "come a long way, baby," in the last 25 years. We have gone from a handful of breakbulk passenger freighters to high-speed, roll-on/ roll-off steamships (TOTE), a national steamship line serving Central and Western Alaska (Sea-Land), two railcar barge services (Alaska Hydro-Train and Canadian National), two roll-on/roll-off barge services to the Railbelt area (Sea-Land and Alaska Hydro-Train), a strong barge carrier serving almost all of Alaska and dominant in Southeast

Alaska (Foss), and a large number of good specialized carriers serving all or parts of Alaska. The transportation choices for shippers on water is vastly greater than it was 25 years ago.

Airline and air freight services have multiplied under deregulation as never before, and there are charter services virtually everywhere in Alaska. The Post Office still handles a vast amount of freight under "bypass" postal service using air parcel post rates rather than regular air freight rates. Local Alaska carriers have gone outside Alaska with mixed success. In most cases, air transportation availability has far exceeded the shippers' demand.

Motor carriage in Alaska has dramatically changed in the last 25 years. With the coming of TOTE a few years ago, the market for handling freight over the long Alcan Highway from Seattle via interior Canada to Anchorage and Fairbanks has almost dried up. The highway system has been vastly improved between Anchorage and Fairbanks; it is now possible to run two 40-foot trailers behind one tractor on that road. Motor carrier service has been very difficult in Alaska because the volume of business would not support the number of carriers that came in under interstate deregulation. Now it appears that state regulation of Alaska trucking will also die soon. The names of most carriers today would not have been recognized 25 years ago. Truck transportation is in great oversupply and Alaska today is a buyer's market.

The Alaska Railroad is the remaining major transportation facility that must be reviewed. On January 5, 1985, it will pass from federal to state control. This will have a huge impact on Alaskans and on shippers operating to and from Alaska. The railroad's huge cash flow will now stay in Alaska, and its destiny will be controlled in Alaska. The state of Alaska got a fantastic bargain when it bought the railroad for $22.5 million. Even though it will have to be upgraded, the railroad still has as much potential and even more than when it was first built. In essence, The Alaska Railroad today is the same as it was years ago.

CHANGES THAT MUST BE CONSIDERED IN 1985

Transportation to Alaska (or anywhere else) is not static. It is revolutionary almost to the point of being a "whirling dervish." Here are just a few of the major

things shippers and carriers must consider in the months ahead in addition to all the other problems of today:

- The slowing of the Alaska business economy
- The Alaska Railroad ownership changes in 1985
- Sea-Land's plans for new bigger and faster Alaska ships in 1986 and 1987
- Deregulation of Alaska state truck regulations in 1985
- Development of the new big double trucks in rail piggyback
- The foreign trade zones and other developments in the Port of Valdez
- The continuing development of roll-on/roll-off barge services
- Contract rates replacing tariff rates to and from the Railbelt
- More interstate truck deregulation, more carriers, and more union problems
- The development of through rate piggyback services between Alaska and all U.S. states
- The impact of new roll-on/roll-off barge services on existing Alaska carriers
- Wien Air and other airline changes involving Alaska
- Possible Interstate Commerce Commission investigation of the Alaska trade and a Federal Maritime investigation of barge services
- Possible Federal Maritime deregulation of the Alaska trade

I am sure everyone in the room could add some items to the above list, but I held it down so I can touch on a few of the major points in greater detail in the limited time I have. My job here is to give an overview that will have you thinking how each of you, alone and in concert with each other, can produce a better system of transportation to and from Alaska in the future.

Overriding all the questions for consideration here today is how to keep the facilities that serve Alaska up-to-date and efficient. Airline companies that run small, slow, gas-guzzling airplanes are in serious trouble, and their troubles are multiplying. The airline companies that buy modern jets appropriate for the service routes will make the money and run away with the business, and those airlines that cannot keep up will drop out. We are already seeing that in at least one airline case right now.

In water transportation, those companies that cannot make their ships faster and more efficient, able to haul more units with essentially the same crew, will go under. Running old, slow, diesel-guzzling ships cannot be allowed if a company wants to stay in business. That is why Sea-Land is buying three new ships that will do the work of four for a lower operating cost and with 50 percent more capacity than those they have today. The trans-Pacific trades are already finding that the old, cheaper ships are a sure way to bankruptcy. Three trans-Pacific companies already quit business this year for exactly that reason. More will follow.

On top of the steamship changes, changes in technology have also come to Alaska this year. We have always felt there was a large market niche for high-speed barge service capable of handling the largest allowable truck trailers in a reasonably fast time between the Puget Sound area and the Railbelt of Alaska. This year Sea-Way Express introduced such a service with tugs that can tow as fast as the old Alaska Steamship Company did 25 years ago. Utilizing state-of-the-art equipment, they can float between 350 and 400 40-foot truck trailers up to Seward, where the new piggyback operation takes over. Sea-Way still has problems, but these will eventually be worked out. In essence, what the company has done is to tie roll-on/roll-off service to a piggyback operation, using the fastest barge service and newest equipment between the Puget Sound area and the Seward area, where they connect with rail.

Crowley Maritime and Alaska Hydro-Train have invested substantial money in refitting several of their car barges to put a roll-on/roll-off balcony above the railcar tracks, providing more transport on the same equipment and reducing the unit cost for freight handling. Capital expenditure, in effect, modernized older barges.

Motor carriage to Alaska is still developing, for the recession years had so depleted the revenues of the carriers and reduced the number of carriers that they have not been able to buy the new highway equipment allowed under the 1982 highway bill. They simply have not had the money to buy the new improved truck tractors nor the new improved 48-foot trailers that do so much to reduce unit cost. Lack of capital is a problem in the Lower 48 as well. Only a handful of prosperous carriers have been able to take advantage of the new size-weight equipment allowed in the 1982 act.

MAJOR PROBLEMS ALASKA TRANSPORTATION FACES TODAY

The booming economy of Alaska has dropped off and now can be described better as simply a good economy, which is down substantially from a year ago. Bob Richards, in his recent speech on Alaska's economic situation, indicated that a 3 percent to 5 percent growth may be expected in 1985. That growth will not fill up the available transport to and from Alaska. It is expected that there will be at least 20 percent to 25 percent excess capacity in the Alaska trade in 1985. The new roll-on/roll-off barge service of Sea-Way Express and Alaska Hydro-Train provides at least 500 extra 40-foot truck equivalents to the Railbelt of Alaska each week. There will be more than that if Crowley handles a tandem tow and slightly less if the Crowley barge handles only a single tow. Five hundred 40-foot trailerloads of freight on top of the carrier capacity of Sea-Land, TOTE, Foss, and others is just not loadable under today's economic conditions. In about two years Sea-Land will add approximately 400 40-foot trailer equivalents more to the Railbelt. Obviously there is a huge overcapacity in the Alaska trade now as in all other water trades.

The additional capacity would not be too bad if the carriers were getting the old rate levels on the loads they do get. The carriers to Alaska are not only going to handle less than full loads on their ships or barges, but they are going to handle it at 10 percent to 15 percent less than they did a year ago. The 8 percent rate increase of nearly a year ago is now only a fond carrier memory. Today only a very modest percentage of Alaska freight moves under tariff rates to the Railbelt. Most of it moves under special contracts filed with the Interstate Commerce Commission on a confidential basis and well below the tariff rates. The carriers serving Alaska will undoubtedly seek higher freight rates to reduce their losses or improve marginal profit, but who will bell the cat by proposing a rate increase when faced now by at least five or six major competitors in the Railbelt area who might or might not follow suit?

The dilemma of Alaska transportation, then, is overcapacity combined with depressed rates, and no price leader capable of leading the industry to a higher plateau of prices. The shippers to Alaska never had it so good, for rate levels today on most items are less than they were 25 years ago under old-style freight handling.

We see lots of trouble for the carriers with an inevitable shakeout of at least one or two before the shooting is over. The problem is guessing who. Sea-Land is very profitable and well financed. TOTE assures us they have put away earnings from good years to take care of bad years. Sea-Way Express is owned and controlled by very competent people who have substantial financial backing. Foss is owned by the Dillingham Company, which is worldwide in its coverage. Crowley is extremely well managed with multiple operations and large financial reserves. Many of the smaller companies, primarily barge lines, are the most vulnerable, but most are operating low-cost barges with low-cost labor, when tonnage warrants. It is difficult to pick which of these will drop out, but inevitably one or more will have to do so unless the Alaska economy returns to a 7 to 10 growth rate. That will only occur if the national oil price goes up, which is unlikely in the foreseeable future, barring Iraq and Iran blowing up each other's oil fields.

The second major problem Alaska faces is the change in transportation regulations and governmental controls. The immediate question is whether the Interstate Commerce Commission will investigate the Alaska trade, as it has been petitioned to do by Sea-Land and TOTE. These companies would like to see the stability of past rate structures restored; but in my opinion, that is wishful thinking. Stable rate structures are gone forever in the Lower 48 and cannot be expected to return in Alaska. Nobody today knows the exact rate his competitor pays or charges. Short notice tariffs made on one day's notice, confidential contracts not available for public inspection, and new tariffs no one has heard of, combined with an ICC committed to contract confidentiality, all make for a mess. Today, contract rates and "gimmick" rates are moving most of the freight, and that pattern will hold in the future. Third-party contracts, such as those held by Washington-Oregon Shippers, Trailer Express Corporation, and others, will be major factors in handling freight to and from Alaska, superseding individual shippers, who cannot keep up with the numerous changes. In the Lower 48, third parties rather than individual shippers control two-thirds to three-fourths of all piggyback traffic, and the percentage is growing steadily.

It is expected that in 1985 all regulation of trucking and railroads in Alaska will die. The Interstate Commerce Commission will certify dozens of new truckers to, from,

and within Alaska in the months ahead. The Federal Maritime Commission wants to get out of regulating all-water traffic in all domestic trades, including Alaska's. In short, governmental regulations will continue to lessen and the marketplace will be setting more of the prices Alaska shippers pay for transportation.

CONCLUSION

The Alaska transportation picture in the months ahead will be no better and no worse than in the rest of the United States. There will continue to be a problem with overcapacity. Outmoded equipment will continue to be operated at a loss, and freight rates will continue to be depressed due to overcapacity and some carriers' need for "cash flow." The carriers that modernize their equipment and the ports that modernize their facilities will ultimately be the victors in the battle for survival. In the meantime, 1985 will be a rough year in the Alaska trade.

THE ECONOMIC DIMENSIONS OF SOUTHCENTRAL ALASKA PORT DEVELOPMENT

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From its earliest days, Alaska's economy has relied on marine transport as its primary means of moving goods. This has been necessary because of its remoteness from the United States, its lack of connection to the North American railway system, and the expense of moving goods over the Alaska Highway. Today, ships and barges still bring in most of the necessities of life and transport from Alaska the products of its economic activity: wood products, pulp, crude and refined petroleum, bulk fertilizer, minerals, seafood, and, beginning in the next few weeks, coal.

It is largely due to this reliance on marine transport that the major portion of Alaska's population and economic activity is located in the coastal and Railbelt areas of the Southcentral area. This part of the state is served by a number of increasingly sophisticated ports which are either ice frozen in winter or in which the ice problem is not so severe as to completely close them to winter navigation. In this discussion we will briefly examine the economic influences of the past several years and how these influences have shaped the changes which are taking place at the four principal Southcentral ports: Anchorage, Seward, Whittier, and Valdez.

Clearly, economic activity in Alaska during the past decade has been dominated by the exploration for and removal of crude petroleum and the refining and production of petroleum products. The huge related expenditures have included those connected with the industrial activity itself and those resulting from state and municipal taxation of the petroleum industry. Further activity has resulted from in-depth development of the services sector, a portion of Alaska's economy that had seriously lagged in development until the past several years. A primary direction of state-sponsored economic development has been toward diversification of activity in anticipation of the decline of petroleum revenues. This has included commercial agricultural experimentation, large-scale fisheries

promotion, and intense emphasis on tourist-related activity. All these factors have combined to create economic patterns far more complex than those that existed only a decade ago. Further, they have all been a part of bringing about change in the physical attributes of Southcentral ports, in the texture of traffic moving through them, and in the carriers serving them.

Anchorage is the primary consumer goods port in the Southcentral region. It is served by Totem Ocean Trailer Express (TOTE), Sea-Land Service, Pacific Western Lines, Coastal Alaska Lines, Pacific Alaska Lines, Central Alaska Marine Lines, and Northland Services on a scheduled (although seasonal for some carriers) basis. TOTE and Sea-Land use ships; the other carriers are barge lines. TOTE, Sea-Land, and Pacific Alaska Lines use the municipal dock. All other carriers use private facilities. Collectively, the water carriers serving Anchorage move about 65 percent of the consumer and industrial goods imported by the Railbelt.

Anchorage has seen steadily increasing consumer tonnages since 1981. However, since 1983 there has been a shift in the way this tonnage has moved--a shift that became more dramatic in 1984 with the introduction of new carriers into the market. These changes correspond to basic changes in other economic sectors.

Between 1978 and early 1981, the primary function of carriers serving Anchorage was to supply the day-to-day needs of a stagnant or declining economy, which had not yet felt the effect of oil-related state expenditures or Phase II developments at Prudhoe Bay. In this market, only TOTE and Sea-Land managed to maintain a reasonable traffic base, while the seasonal barge carriers had only 5 percent or less of the market. However, 1981 saw the beginning of a growth pattern that has lasted to the present. This growth, coupled with a recession in the United States, has provided the basis for substantial increases in employment and population, with resultant demands for new housing and commercial building space. In addition, the further development of facilities at Prudhoe Bay, Kuparuk, and, more recently, Milne Point, has provided industrial traffic. The majority of these products do not require the level of service provided by TOTE or Sea-Land. These factors gave the barge companies the opportunity to establish a place in the market. This they have done, both in Anchorage beginning in 1983 and in the competitive ports

of Whittier and Seward in 1984. As a result, the market share of Sea-Land and TOTE has declined, even though, until recently, they have been able to keep their sailings relatively full.

The physical plant changes in Anchorage during the past five years have been aimed at making existing facilities more usable rather than developing them further. An additional cargo transit area has been developed south of the municipal dock. The private docks of Pacific Western Lines (PWL) and Anderson Terminal (serving Coastal Alaska Lines and Central Alaska Marine Lines) have seen more extensive change, including PWL's installation of a dock along Ship Creek capable of permitting forklift discharge of cargo, which will be more efficient than unloading by crane. Both facilities have considerably increased the transit space available for cargo storage and marshalling.

Seward is the Southcentral port that has seen the most dramatic change over the past five years, both in facilities and in types of cargo handled. After completion of the Trans-Alaska Pipeline but prior to 1981, the primary traffic through Seward was logs, wood chips, and an occasional barge of breakbulk freight. However, 1981 increases in North Slope activity supported the regular arrival of ships carrying iron and steel products that were soon to make Seward the port-of-entry for the majority of this traffic into the state. The same year also saw the first substantial work on the Fourth-of-July Industrial Park Project, which was conceived as part of the state's economic diversification effort. In its first stage, the project was designed to provide a shipyard facility capable of servicing the largest fishing vessels operating in Southcentral and Southwestern Alaska waters, as well as ships operating in support of offshore oil development. It was hoped that a number of ancillary activities in support of the shipyard would develop and this has, in fact, begun to happen, particularly with regard to fueling and provisioning of foreign bottomfishing fleets.

A more recent development has been related to the same factors of economic change noted in the discussion of Anchorage--the growth and change in the market for imported goods, which has permitted new carriers and services to enter the market. In April 1984, Seaway Express began service between Seattle and Seward, with connections via The Alaska Railroad to Railbelt points, and via motor carriers to points on the Kenai Peninsula. The company

uses tri-level, roll-on/ roll-off barges which have necessitated considerable marine, rail, and motor terminal development adjacent to ARR's Seward facility.

The most extensive Seward development is the construction and pending operation of the coal export facility. This joint venture of the state of Alaska, Sun Eel Alaska Corporation, and The Alaska Railroad is only the second coal export facility on the U.S. Pacific Coast. It will begin receiving coal in December 1984, and the first ship departure is scheduled for early 1985. Once again, this project is part of the state's effort to diversify economic activity and to develop mineral exports. The physical additions to the port include a new dock with bulk shiploader, approach trestles with conveyors, a 10 acre stacker/reclaimer area, and a rail-unloading trestle.

Whittier has also seen a number of changes related to both freight and passenger service during the last two years. Freight developments have been reactions to the same economic influences noted as being at work in Anchorage and have included the expansion of railcar service by Alaska Hydro-Train and Canadian National Railway in 1983 and the addition of a roll-on/roll-off trailer deck to the AHT barges in 1984. The latter development also necessitated the creation of a rail trailer terminal adjacent to the present port area.

A further area of port development in Whittier has been related to the state's interest in broadening of the economic base--in this case, tourism. In 1983, Cunard Lines began calling at Whittier as the northern terminal of its cruise ships originating in Vancouver, B.C. Cunard expanded this service in 1984, adding a second operator. It is anticipated that 1984 will see a third operator, as well as expansion of existing service. These cruises have proved to be a most effective way of combining tourist visits to Southeast Alaska cities with a final destination in Central Alaska, thus accomplishing a long-time goal of many operators. Whittier provides the operators with the most efficient ship utilization based on seven-day cruises. To date, not much Whittier terminal development has been necessary to be able to accommodate this traffic; however, the expectation of over 36,000 passengers in 1985 will require terminal investment at the Whittier port and the Anchorage rail terminal.

Valdez is one of the great question marks in Southcentral port development. Clearly, the large volume of crude petroleum passing through Alyeska's Valdez terminal provides the source of wealth for much of the other economic activity in the state. However, until recently Valdez has been unable to participate in the movement of general cargo into the state. This is because of its lack of access to the Anchorage market, which severely restricts the size of the market available to Valdez in the Fairbanks region and Prudhoe Bay.

In 1983, the city of Valdez completed a dock capable of handling large, modern break-bulk and container vessels. Besides its excellent water-related facilities, Valdez has one of the finest cargo transit areas of any Alaska port. During the past several months, the contents of several ships of steel products have been transloaded for movement to Prudhoe Bay. While the technical performance of the Valdez facilities have been impressive, the port lacks a sizable market because of its weak competitive position. The absence of well-developed inland transport systems represents a major drawback. It will be several years before it is apparent whether Valdez has been able to establish a clear position in the market; however, its present efforts provide an exciting development in a rapidly changing market.

Thus, the influence of an economy which has changed in both size and texture during the past five years has caused a corresponding evolution of carriers and ports in Southcentral Alaska. Some of the recent changes may not last, but probably much of the structure of Alaska's marine transport and port system has been changed permanently. Additionally, the influence of specific state economic development policy decisions has altered the basic direction of a number of port systems. The next decade should provide participants in the area's port operation system with considerable excitement as the ripple effects of the current processes of change are felt.

Innovative Technology

CARGO HANDLING TECHNOLOGY AND PORT DEVELOPMENT

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For centuries, the transfer of cargo between ship and shore has remained basically the same. Improvements in ship's gear have allowed larger cargoes to be lifted or the speed of transferring cargo to be increased, but the nature of the cargo transfer operation has remained basically much the same over history. In the area of general cargo shipments, the advent of containerization in the late 1950s was the first truly significant change in technology since the Phoenicians were trading by sea centuries ago. In the last decade, we have also seen some major technological improvements in the handling of both dry and liquid bulk cargoes. These advances have come both in shoreside equipment and in on-board cargo handling systems that allow expedited loading or off-loading of cargo.

The high cost of capital and uncertainties in world trade will continue to put pressure on shipping companies to maintain the highest level of asset utilization. The highly efficient use of assets ensures that carriers' capital costs do not get prohibitive. As is true of any commercial vehicles, the terminal time spent by vessels is the area of major emphasis. Improvements in the turnaround time increase the utilization of vessel assets by maximizing deployment for cargo movement, as opposed to cargo transfer.

Ports have historically been at the end of the technological chain of events because of several factors. The time required to construct or modify fixed facilities to accommodate new technology is one of the major obstacles. Furthermore, ports in the United States are generally quasi-governmental in structure, and therefore have difficulty getting funds to devote to research and development on cargo handling. And certainly the formation of needed capital is a problem facing all ports, because of the tremendous sums required to construct marine facilities.

PLANNING FOR NEW TECHNOLOGY

Competition for public funds, changes in trade patterns and changes in the regulatory environment have caused ports to take a new direction in the recent past. The pressure on ports to become self-sustaining, and the capital formation process, have necessitated more long-range and strategic port planning than ever before. Such planning becomes even more critical when one is looking to accommodate future changes in technology, without losing responsiveness to current market needs.

The first step in strategic planning for ports must be the development of a business plan which analyzes factors including economic impact, industrial linkage, land utilization, and capital formation. This business plan must also take into consideration the competitive position of the port, both geographically and in modal economics, so that the public funds expended have the maximum potential for utilization over the long term.

The next step in the planning process is the development of a comprehensive marketing plan. The marketing plan, to be meaningful, should use commodity and trade forecasts for developing econometric models that will identify the market potentials and define what services and facilities are required. This marketing plan will allow informed decision making on what position in the marketplace best suits the port and on the priority order in which market segments should be exploited.

An outgrowth of the marketing plan is a port facilities plan addressing the major needs of the current and future markets. How best to utilize land, marine structures, buildings, and equipment are the key determinations that must be made in the facilities plan. Certainly these decisions must be based on current thinking regarding probable future changes in technology. Because of the limited capital available, ports must strive to plan facilities that are utilized efficiently but are still sensitive to the needs of the users. This objective would lead to designing flexibility into new facilities, with regard for cargo compatibility.

TERMINAL PROJECT DESIGN

The design of terminal projects is basically a trade-off between capital costs and operating costs. There are,

however, other considerations that must be put into the equation to ensure the long-term utilization of assets, and their potential adaptability to changes in the shipping environment. The adaptability of buildings, wharves, and docks is a prime consideration when planning for the development of a port. Because of the high cost of future modifications or rehabilitation one must consider the long-term flexibility of new structures.

One of the primary determinants of flexibility in terminal projects is their accessibility to land transport. This is an area that has received some analysis, but inadequate thought is generally put into designing facilities with transport infrastructures that will be usable over a long period of time. Roadways, interchange points, and marshalling areas must all be well designed to avoid the major problems typically faced by modern ports in expediting their flow of cargo. Basic cargo flow charts, by themselves, are not sufficient to determine the design requirements of terminals for the long term. Potential changes in vehicle sizes, standard shipment configurations, and dockside cargo transfer rates must be included. Most port planners spend significantly more time concerning themselves with the basic highway network and rail network, to and from the port, than they do with the internal flow of traffic through the port properties. This lack of attention to a primary functional area of ports further constrains the implementation of new cargo handling technologies at ports around the world.

Vessel design characteristics are another of the primary determinants of terminal flexibility. Forecasting standardized vessel sizes and types is a complex task. In addition to analyzing world fleet changes over time, it is essential that the terminal planner have a clear understanding of the probable commodities to be handled, and the characteristics of each type of cargo. Studying new-building statistics will help predict the make-up of the world fleet in the near future. Over-tonnage conditions and low scrap value will undoubtedly affect the fleet, making it likely that a number of older vessels will still be deployed in trades, in spite of the availability of technologically advanced ships.

To predict vessel fleet characteristics farther in the future, two primary considerations come into play--institutional constraints against the deployment of certain types of vessels, and, most important, shipping economics.

It is incumbent upon the port planner to monitor trends in vessel design as well as in the regulatory environment, to determine what institutional barriers and economic considerations are affecting the construction of new vessels.

A third determinant of terminal flexibility, although not as important as the first two, is structural design and materials. Terminal planners must not only consider the cost of construction and the durability of the materials used, but also must show how the structural design and materials may be adapted to new automated cargo handling and storage machinery. This task is complicated by a lack of information on the dimensions of this type of automated machinery, inasmuch as current applications vary significantly from region to region and from commodity to commodity. Nevertheless, there are certain decisions in the design of buildings and in the types of materials used that can lead to greater adaptability to new or expanded uses. Basic door widths, ceiling heights, and overall dimensions of the building are but a few of the factors that can make a difference.

EMERGING TECHNOLOGY AND FUTURE TRENDS

Advances in technology are currently taking place in all areas of cargo handling and transport. Efforts to increase the speed and reduce the complexity of container transfer has led to an increasing use of bridge-type yard cranes supporting wharf cranes. The increasing use of high cube containers and the greater density of container years are compelling the use of new technology in container handling equipment and in storage facilities within the terminal. In addition, computer control systems are becoming commonplace, and make possible developments such as using bar codes for container identification, and automating container routing systems within the terminal.

In the handling of general cargo and neo-bulk cargo, some exciting new developments are underway. Fully automatic conveyor systems to handle standard-dimension bags, boxes, and cartons are now being installed in a few worldwide ports. There has also been substantial development in pre-slinging systems for handling general cargo. These systems significantly reduce the loading time for the vessel, at a very nominal cost. There are also several new types of cargo manipulation devices being developed with the aim of simplifying the transfer from vessel to landside

equipment. Many of these devices are reusable and similar to what has been used during the last decade in domestic transportation within heavy industry.

Dry and liquid bulk cargoes have perhaps been the object of the greatest technological development in recent years. The expanding use of self-unloading vessels for bulk cargoes has caused some slowing in the design and development of landside cargo transfer equipment. There are, however, several trades for which the self-unloader bulkers are not suitable. Substantial progress has been made in designing and constructing transfer equipment that meets the needs of several differing bulk commodities, and that can operate in both loading and unloading modes. The ever-increasing movement of raw materials to developed nations will require continuing attention to the design of transfer equipment that can handle an even greater variety of commodities.

Several trends in cargo transfer are evident at this time. Certainly there will be a continuing movement towards unitizing more types of cargo into some easily transferred shipment configuration. There will be certain trades, however, where because of landside transport conditions or demand, unitization will have very limited application. Another obvious trend in all types of cargo is the movement to high-density storage facilities in terminals. A less obvious trend, however, is the increasing numbers and types of operations performed on specific cargo at the transfer terminal. These operations go beyond the traditional weighing and measuring functions and include various levels of processing, packaging, and custom blending of the cargo.

Another less obvious trend is the current investigation of direct transfer of both container and bulk cargoes from vessel to landside conveyance. This trend, if it gains momentum, could present challenges to terminal planners because direct transfer requires different wharf and infrastructure design. An acceleration in the development of this technology could place increasing pressure on existing port facilities, which will need to handle several types of cargo over the same marine structures and through a common terminal area, and may be faced with substantially increased terminal congestion.

There are several specific technological changes that we should be monitoring. In the area of vessel design, several new types of technology are under serious consideration. Because ship technology advances faster

than port facilities technology, and because there is an increasing need for ships to be flexible enough to be able to call at ports in differing levels of development, some new designs are on the horizon. We have witnessed some movement away from cellular container ships to con-bulkers and con-tankers. There is also substantial development in integrated tug barge systems and submersible vessels with float-on/float-off transfer systems. Existing designs of multi-hull and semi-submerged vessels offer substantial gains in the efficient use of a ship's volume and weight capacity.

Also underway are developments in port facilities and equipment that may provide port planners with some idea of the technological advances they will need to make room for in the future. In the area of cargo transfer, significant research is being done on both guideway traction devices and air/water cushion transfer devices. The increasing cost of waterfront-fixed facilities is contributing to greater development and use of floating terminal systems, which have the advantage of being able to change location. Continuous rail transfer systems are currently under substantial development and have already received some application in the container transfer area.

SUMMARY

In summary, port planners must take a longer-range approach to terminal design and planning. A comprehensive business and marketing plan should be done to determine the facilities needed for the most probable scenarios of the future business environment. Such planning requires that port organizations continually monitor, in some depth, the technology being developed in materials handling equipment, domestic distribution facilities, rail and truck vehicles, and water vessels. Besides monitoring technological advances, it will become increasingly important for officials to have a thorough understanding of shipping and transport economics, so as to be able to predict better dynamics of their business environment.

It would also seem prudent for port organizations to develop in-house engineering capabilities. Although this may result in additional staffing of the port authority, it is essential for those involved in the design of terminal facilities to have some knowledge of the operational environment that those facilities will have. It is often difficult for consulting engineers to get this type of

hands-on experience during infrequent visits to ports. The continuing interaction of engineers and operational personnel in the port organization will give the engineers a much clearer perspective on the operating environment and allow them to give the operational personnel the benefit of their backgrounds in technology applications.

It is reasonable to expect that the port business environment will continue to become more complex, and that the pace of change in the environment will accelerate. The use of a disciplined planning system to identify future needs is of paramount importance. Further, the development of an organizational capability to monitor and anticipate changes in technology will better prepare the port to accommodate these changes. This process will assure the productivity of public investments in the long-term, and allow terminals to continually meet the needs of the marketplace.

TRENDS AND THE FUTURE OF THE OCEANGOING WORLD FLEET AND AN OVERVIEW OF ALASKAN PORTS

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INTRODUCTION

The problem that the Corps of Engineers confronts in every study and evaluation for the improvement of a deep-draft harbor is basically a comparison of the cost of transporting commodities under existing harbor conditions with the cost of moving them under future, improved conditions. The proposed improvement is usually the deepening or widening of a channel. The analysis required is a comparison of the transportation cost using the existing fleet with the transportation cost using the future fleet. The various components of that analysis are summarized in Figure 1, which shows the nine steps in a deep-draft navigation analysis as specified in Principles and Guidelines, issued by the U.S. Water Resources Council.[1] The U.S. Army Engineer Institute of Water Resources is currently participating in developing information to assist Corps of Engineers navigation planners at field offices, such as the district in Anchorage, in conducting deep-draft navigation studies. This paper incorporates preliminary research that has recently been initiated at the Institute on this subject.

This paper will focus on steps one through seven shown in Figure 1 and will discuss the following subjects, in order to relate Alaskan ports and commerce to world trade patterns and the world oceangoing fleet:

1. Alaskan waterborne commerce including port depths, waterborne commerce, and vessel traffic.

2. World trade patterns for the major commodities, including crude petroleum, petroleum products, coal, grain, and forest and wood products.

3. The depths of world ports and United States ports.

4. The world fleet: tankers, dry bulk carriers, containerships, RO/RO vessels, and general cargo

freighters. This paper summarizes the existing fleet, ships on order and other information regarding fleet projections.

5. Vessel operating costs per ton-mile and examples of voyage costs for various loadings and vessel drafts.

6. Factors affecting the future fleet.

7. The outlook for various types of vessels, based on preliminary findings.

ALASKAN PORTS AND WATERBORNE COMMERCE

The need for deepening or other port improvements in Alaska or elsewhere depends upon current and projected commodity movements and on the vessels used in a given trade. Alaskan ports, their depths, types of commerce and vessel traffic are discussed in this section as an introduction to an overview of world trade and the characteristics of the current and projected world fleet with respect to major Alaskan commodity movements.

For the 20 major Alaskan ports (Figure 2) 14 ports have depths of 30 feet or more and nine ports have depths of 40 feet or more. Listed below are the ports and their depths in feet, shown in parentheses. Depths given here are maximum controlling depths at mean low water for harbors or alongside docks or the drafts of vessels actually using secondary ports. Corps of Engineers publications entitled Waterborne Commerce of the United States and The Ports of Alaska were the source of information.

Twenty Major Alaska Ports

Depth Range	No. of Ports	Port (Depth)
>45	2	Valdez (150), Ketchikan (65)
30-45	12	Skagway (43), Nikishka (42), Juneau (40), Kodiak (40), Seward(40*), Whittier (40), Wrangell (40), Sitka (36), Anchorage (35), Dutch Harbor/ Unalaska (35), Metlakatla (35), and Homer (30)
20-29	2	Petersburg (28) and Cordova (20)
<20	4	Kake (16), Bethel (15), Dillingham (14), and Nome (14)

*A new coal-loading terminal at Seward will provide a deeper channel to accommodate large colliers.

Commodity Traffic

Alaska's ports can be grouped into two categories--primary and secondary--based on their total waterborne commerce (Figure 2). There are 11 primary ports, which are defined in this paper as those with 1970-81 average annual waterborne commerce exceeding 200,000 tons annually (Table 1). Traffic at four ports was over 1 million tons each in 1983 based on preliminary data--Valdez with about 92.7 million tons, Nikishka with about 5.5 million tons, Anchorage with about 2.4 million tons, and Ketchikan with about 1.8 million tons. There are nine secondary ports with 1970-81 average annual commerce ranging from 25,000 to 200,000 tons (Table 2). Traffic at four secondary ports averaged greater than 100,000 tons annually from 1970 through 1981.

Trends in total waterborne commerce during the past 14 years were generally mixed for both the primary and secondary ports. Among primary ports during the 1970-81 period, five experienced their lowest level of traffic in the last four years, while five had their highest level of traffic in the last four years (Table 1). At seven ports the average traffic for 1982 and 1983 was less than the average traffic for 1970-81. During the 12 year period from 1970 through 1981, three secondary ports recorded their peak traffic year in the last four years and two ports recorded their lowest traffic year during 1978-81 (Table 2). The average traffic for 1982 and 1983 compared to the 1970-81 average was greater for five secondary ports and less for four. The total average commerce for the secondary ports rose slightly from 83,000 tons for 1970-81 to 84,000 for 1982-83.

The primary ports engaged in four main types of waterborne commerce--foreign, domestic coastwise, internal, and local (Table 1). Eight of the primary ports handled over 50,000 tons annually of foreign trade in at least one year during the 1970-83 period. It was the dominant type of traffic for four ports in some years. Exports overshadowed imports at five ports. Coastwise traffic between Alaskan ports and those in the rest of the nation, especially Pacific Coastal ports, was very significant. Eight ports handled over 50,000 tons of coastwise traffic in at least one year during the 1970-83 period. Coastwise shipping was the dominant traffic type for seven ports in some years. The largest coastwise traffic was crude petroleum shipments from Valdez of 90 million tons in 1982 and 1983. Coastwise receipts strongly outweighed shipments at six ports.

Internal or inland waterway traffic was the dominant traffic at three ports along the Southeastern panhandle and internal receipts overshadowed shipments. Local traffic within the port was significant only at a few ports.

The 20 Alaskan primary and secondary ports handled a significant amount of traffic (20,000 tons and more) in each of 16 commodity groups (Tables 2 and 3). Three Alaskan ports engaged in significant trade in a large number of commodity groups; Anchorage with 13 commodities, Whittier with nine, and Sitka with six. The five commodities with significant traffic at five or more ports were petroleum products; furniture, pulp and paper products; chemicals; and food products.

In 1982, eight foreign trade commodity groups were moved in significant volumes through the primary ports. Five ports exported significant amounts of lumber and wood products, furniture, and pulp and paper products totaling about 1.4 million tons. The principal commodities exported were logs, lumber, and pulp. The other significant export commodities were petroleum products (1,333,000 tons) and chemicals (944,000 tons) from Nikishka, metallic ores from Canada through Skagway (272,000 tons), and fish. The commodities imported in 1982 were all under 250,000 tons. In 1983 Nikishka far surpassed all other Alaskan ports in foreign trade, with exports of liquefied natural gas (1,048,000 tons), urea (779,000 tons), and anhydrous ammonia (164,000 tons).

The major Alaskan exports include forest products (largely wood pulp and other wood products), seafood products, liquefied natural gas (LNG), and urea (Table 4 and Figure 3).[2] They represent the "big ticket" surface shipments leaving Alaskan ports on dedicated ships bound for single foreign markets, usually Japan. Forest product exports, sensitive to the world recession and the strong dollar, peaked in 1980 with an export value of $339 million and then dropped off abruptly to around $278 million in 1981 and 1982. Seafood product exports have also been strong but variable. The recession and the strong dollar overseas may have much to do with the 1982 decline in the trade. However, the dramatic growth in seafood exports since 1977 and the sheer magnitude of the potential Asian market make the long-term prospects for this trade appear excellent.

The overseas market for natural gas has also shown considerable growth since 1977. Unlike the export of crude petroleum, natural gas exportation is not prohibited by federal law. The value of LNG exports grew rapidly from $95 million in 1977 to over $310 million in 1981, before

declining slightly in 1982. There is growing momemtum in the state of Alaska and elsewhere to change the law to allow Alaskan crude petroleum to be exported to Pacific Rim allies (Japan, South Korea, Taiwan, the Philippines), in a fashion similar to the current LNG trade.[3] If such trade is authorized, the petroleum would likely be shipped in Very Large Crude Carriers (VLCCs).

Table 5 and Figure 4 depict Alaskan exports by destination for 1977 through 1982. Japan is by far the largest recipient in terms of trade value, accounting for 76 percent of the trade in 1982. Other major importers include China, South Korea, and Australia. Of the $1.01 billion in exports to Japan in 1982, seafood accounts for $350 million, LNG and other petroleum and chemical products account for $307 million, and forest products account for $221 million.

It is important to note that these statistics were compiled by the U.S. Customs Service and represent goods leaving Alaskan ports directly for foreign destinations. Total Alaskan exports are undercounted due to a sizable volume of traffic which moves to another U.S. port before export--generally Seattle. The state of Alaska has estimated that seafood exports may be undercounted by as much as $500 million due to domestic movement to Seattle for processing before export to Asia (mainly Japan). Likewise, a significant volume of forest products moves in small coastal shipments from the Southeast panhandle of Alaska to the Seattle area for consolidation into large shipments for export. Consequently, such traffic shows up in data for the Seattle customs district rather than with the Alaska statistics.

Vessel Traffic

Traffic at the primary ports by vessels with a draft of 25 feet or more rose over 240 percent from 1970 to 1982 (Tables 6 and 7). Total vessel trips at eight of the primary ports increased from 361 to 1,234 (Figure 5). Between 1970 and 1982 the number of ports handling 100 or more trips by self-propelled dry cargo and passenger vessels with a draft of 25 feet or more rose from one to five. Four ports recorded fewer than 50 trips by vessels with a draft of 25 feet or more. Although nine ports possess depths of 35 feet or more, Anchorage was the only port with trips by vessels drawing 35 feet or more.

Traffic by self-propelled tanker vessels in 1982 separated the primary ports into three groups (Tables 8 and 9 and Figure 6). Valdez with 1,777 trips and Nikishka led all

others. Four ports handled about 20 to 60 tanker vessel trips in 1982 (Figure 6). In contrast, in 1970 there were about 90 to 100 trips by tanker ships at each of four ports and about 25 to 70 trips by tanker ships at each of three ports. Five factors affecting the changes included the emergence of Valdez as a shipper of crude petroleum, the disappearance of kerosene traffic, the significant loss at Anchorage and increases elsewhere of traffic petroleum products, and a shift from ship to barge movements. In 1982, five ports had fewer than five tanker vessel trips each. Among the ten secondary ports in 1982, there were five ports with 20 to 40 trips and four ports with no trips by tanker ships.

The ports' tanker vessel traffic is supplemented by non-self-propelled tank barges moved by tugboats or towboats (Tables 10 and 11). Movements of tank barges were typically shallow draft, but sometimes they registered at 15 to 24 feet. At the primary ports in 1982 there were over 150 trips by non-self-propelled tank barges at three ports. There was an increased use of tank barges at the expense of tank ships at five ports. Seven ports had about 10 to 55 trips. Among the secondary ports, tank barges made 125 to 200 trips at two ports in 1982. One secondary port had 70 trips, three had 5 to 30 trips, and three had none (Table 10). Ferry traffic in 1982 carried nearly 400,000 passengers at Ketchikan, about 80,000 at Juneau and 90,000 at Skagway (Tables 10 and 11).

WORLD TRADE IN MAJOR COMMODITIES

Major Bulk Commodities, 1970-82

The need for deepening at coastal ports, including those in Alaska, depends on the types of vessels calling at the port at present and in the figure. The vessels comprising the present and future world fleet depend upon the commodities being shipped, particularly the bulk commodities, which require the largest vessel sizes in order to be shipped economically. Crude petroleum, liquefied natural gas, and forest products are all bulk commodities important to Alaskan waterborne commerce. Coal exports are scheduled to start in the near future. The requirements of the tankers and dry cargo vessels of the world fleet used in these commodity trades will determine what port depths are needed in Alaska and elsewhere for a port to remain economically competitive. Although not significant in Alaskan trade, two other important bulk commodities on the world scale are grain and iron ore. The world trade in all these bulk commodities is discussed below, and projections for petroleum and coal are highlighted.

The world seaborne trade for all commodities and for crude petroleum from 1970 through 1982 show somewhat similar trends: increasing traffic from 1970 to 1973-74, a significant drop in 1975, renewed growth through the remainder of the decade, and then a decline through 1982 to the lowest level since 1970 (see Table 12 and Figure 7).[4] Since crude petroleum accounts for roughly a third of total seaborne trade, wide variations in crude traffic are naturally mirrored in total traffic patterns. The oil embargo and the oil crisis/recession of the 1970s and early 1980s are clearly evident. (Figure 8 shows 1982 world trade flows for crude petroleum.)

Total world seaborne trade, the total of selected major bulk commodities, and the total of the remaining commodities for 1977 through 1982 are shown in Figure 9. The major bulks include crude petroleum, petroleum products, iron ore, coal and grain. While the major bulks generally mirror the fluctuations in total traffic, the remaining traffic--minor bulks, general cargo, etc.--show much less change over time. Overall these other trades have generally increased, although by 1982 the total for them had dropped back slightly to 1.38 billion short tons, probably due to depressed markets associated with the world economic recession.

A breakdown of the four major commodity groups other than crude petroleum--petroleum products, iron ore, coal and grain--is shown in Figure 10. (Crude petroleum is omitted since it was shown in Figure 1). Petroleum products, as would be expected, follow the same pattern as crude, with a significant dip in 1973, followed by renewed growth until late in the decade, then a decrease through 1982.

Coal and grain show similar patterns of relatively consistent growth over the period 1970 through 1982. Coal traffic, with some fluctuation, doubled between 1970 and 1981, before declining slightly in 1982. The growth in the coal trade was most marked between 1978 and 1981, as higher petroleum prices and tighter supplies affected the world market. Grain traffice more than doubled over the same period, before also declining slightly in 1982 (Figures 11 and 12 show 1982 world trade flows for coal and grain, respectively.)

Iron ore shows a highly fluctuating pattern characteristic of a commodity very sensitive to world economic conditions. (See Table 12 and Figure 10.) Spectacular growth in trade in the early 1970s peaked in 1974 and then declined markedly. Growth resumed rapidly during 1978-79, only to fall again, with the onset of the late 1970s-early 1980s reces-

sion, to 300 million short tons in 1982, the lowest amount in a decade. (Figure 13 shows 1982 trade flows for iron ore.)

Petroleum Waterborne Commerce and Projections

As can be seen in Table 13 and in Figure 14, total seaborne movements of crude and products to the United States are forecast to increase moderately through 1985, and then to level off throughout the remainder of the decade.[5] While little change is indicated in the volume of movements between 1985 and 1990, Drewry forecasts a shift in the compositions of those movements. Forecasts indicate that crude petroleum movements will decline, but that this reduction will be offset by growth in the movement of products to the United States. Declines in domestic production in the Lower 48 will be offset somewhat by Alaskan supplies and by decreasing consumption per capita.

All Alaskan crude is destined for the U.S. market and will continue to be, barring changes in the law governing this trade. This oil is moved by tanker (usually VLCC); roughly half is shipped to the west coast, one-third to the U.S. Gulf Coast and one-sixth to the U.S. Atlantic Coast. The Gulf and Atlantic coastal shipments are via the Panama Canal or through the Panamanian pipeline and then on to the Gulf and Atlantic coasts in medium-sized tankers.[6] As can be seen in Figure 14, Alaskan oil movements to the Lower 48 are expected to remain nearly level through 1990.

The Caribbean (including Mexico and Venezuela) share of the U.S. seaborne trade in crude petroleum and products is projected to increase by 1985, but then to decrease during the remainder of the decade. The current and projected movements of crude petroleum and products from a number of origins, including Alaska, Northern Europe, the Middle East and North and West Africa, include some tonnage which is transshipped in the Caribbean instead of moving directly from the source area to the U.S. coast. Such transshipment allows using larger tankers for the bulk of the journey and then transloading to smaller vessels to reach final destinations on the U.S. mainland. The Middle East and North Africa are projected to increase their shares of the U.S. petroleum market significantly between 1985 and 1990. Like Alaska's, the U.S. Gulf's share is expected to remain relatively flat, while the market shares of Northern Europe, West Africa, Southeast Asia and other sources are forecast to grow modestly over the period. Most of the "other" category is attributable to South American sources.

Coal Waterborne Commerce and Projections

The Appalachian Regional Commission, the U.S. Department of Energy, and many other sources have made projections of U.S. coal exports through 1995. The ARC projections indicate renewed growth in the U.S. coal trade, but at a greatly reduced level from that experienced during the late 1970s and early 1980s.[7] It can be seen from Table 14 and Figure 15 that U.S. coal exports declined significantly after peaking in 1981. The projections indicate that the volume of U.S. exports will not again reach the levels of a few years ago until well into the 1990s. Factors accounting for the recent decline and projected slower future growth of the U.S. coal export market include the world recession, higher mining costs and domestic transportation costs for U.S. coal, the continued strength of the U.S. dollar abroad, increasing supplies from other traditional sources (Poland, South Africa and Australia), new international sources (Columbia, China), and, of course, the current petroleum surplus and projections of lower future cost of petroleum.

The ARC report does not forecast the Alaskan share of the future U.S. coal export market, but does have this to say about Alaskan coal sources:

> "Alaska has extensive coal deposits, but due to its remoteness from major domestic consumers and limited surface transportation facilities, Alaskan coal has not been subjected to a rigorous analysis. However, after the 1973/74 oil embargo Alaskan reserves were given much more serious consideration, especially by potential importing countries in the Pacific Rim. At present, some coal shipments have been made to Korea and a contract for shipments of about 0.8 million short tons per year has been reportedly signed. There are currently other prospects under investigation to export Alaskan coal to other Pacific Rim countries. Most of the currently developed Alaskan reserves are subbituminous or lignite, and are very low in sulfur."

Table 15 and Figure 16 show projected world coal trade flows in 1985, 1990, and 1995. While the United States continues to be the single largest supplier of coal to importing nations, its share of the world market is projected to decline from just over 30 percent in 1985 to about 24 percent in 1990 and 1995. Total demand by coal-importing nations is expected to grow substantially over the decade.

Forest Products Waterborne Commerce and Projections

World production and exports of forest products for 1973 and 1977 is shown in Table 16.[8] Total production shows a modest increase from 2.60 billion short tons in 1973 to 2.68 billion short tons in 1977. Total world exports in 1977 amounted to 197 million short tons, or 7.3 percent of production. The U.S. share of total production was 446 million short tons, or about 17 percent.

According to the Institute for Water Resource's National Waterways Study, overall projections of U.S. forest products exports to the year 2000 show a decrease in total tonnage during the period (Table 17).[9] A slight increase in total traffic is shown between 1980 and 1985, prior to the start of the longer-term decline. The study broke forest products down into two categories: (1) lumber and wood products, and (2) pulp, paper and allied products. The lumber and wood category is the largest and forms the basis of the overall decline over the period. The smaller pulp, paper and allied products category shows an increase from 5 million tons exported in 1977 to 7.7 million tons projected to be exported in 2000.

DEPTHS OF WORLD PORTS AND UNITED STATES PORTS

One of the questions in analyzing the composition of the world fleet is the depths of harbors around the world. A tabulation of the depths of world harbors is not included in this paper, but a view of the world's deepest harbors is shown in Figure 17, which shows ports capable of handling 150,000 DWT vessels that are about 55 to 60 feet in draft. The United States can boast very few such ports and these are all on the Pacific Coast; they include Valdez, Los Angeles/Long Beach and some sites in the Puget Sound area. Figure 18 shows ports in the Lower 48 that are 40 feet deep or greater. Several of these harbors on all U.S. coasts have been proposed for deepening up to 55 feet, as noted in Figure 18. These two figures are from a report, authored by LG E.R. Heiberg III, Chief of Engineers, which contains additional details about plans for other harbors in the Lower 48.[10]

WORLD FLEET: TANKERS, DRY BULK CARRIERS, CONTAINERSHIPS, GENERAL CARGO FREIGHTERS AND RO/RO VESSELS

This section deals with trends in the characteristics of various vessel types with respect to historical and future vessel deliveries, vessel draft and deadweight tonnage (DWT). It includes 19 tables indicating historical trends from before 1959 to the present, as well as projections for 1985-90.

Trend Analysis, 1959-90

Tanker deliveries increased steadily after 1959, reaching a peak during the 1974-78 period. Tanker deliveries then decreased drastically and they are expected to continue to decrease into the future (Tables 18 and 19 and Figure 19). Another factor to note is the dramatic change in vessel draft* and DWT. An example is the record of tanker deliveries greater than 65,000 DWT (45-foot draft). From 1964-68, there were 89 tanker deliveries over 65,000 DWT, or 13 percent of total deliveries of 665 tankers. From 1969 to 1973, the tanker deliveries over 65,000 DWT were 375 of 1052, or 36 percent of total deliveries. During 1974-78, tanker deliveries over 65,000 DWT were 528, or 41 percent of 1279 total deliveries. Since 1979, however, deliveries of these large tankers had dropped back to about 5 percent (48 out of 906). Similarly, 15 of 318, or 5 percent of tankers on order, have a draft greater than 45 feet (Table 19).

The delivery of dry bulk carriers (DBC) increased historically, reaching a peak from 1974 to 1979 (Tables 20 and 21 and Figure 20). However, since 1979 the delivery has declined, and an even further decline is expected during 1985-89. The draft and DWT of DBCs also increased historically through the 1969-78 period, reaching a maximum of 200,000 DWT (55-65 foot draft). DBCs up to 240,000 DWT (69-foot draft) were delivered in the 1979-84 period. There are 37 vessels with drafts of 50-65 feet scheduled for delivery from 1985 to 1989.

The delivery of containerships has increased substantially over the years, peaking during 1974-78 (Table 22 and 23 and Figure 21). However, during the 1979-83 period there has been some reduction in the delivery rate, and a drastic reduction in delivery is expected during the 1985-89 period. The most popular DWT range has been 25-65,000, with a corresponding vessel draft of 30-45 feet.

The RO/RO vessel deliveries peaked during 1974-78 and decreased steadily thereafter (Tables 24 and 25 and Figure 22). The maximum draft increased to the 35-40 foot level from 1979 to 1984. The most popular size has been 11,000 DWT or less, with a corresponding vessel draft of 15-25 feet.

The general cargo freighter peak deliveries occurred during 1969-73 and 1974-78 (Tables 26 and 27 and Figure 23).

*Maximum summer draft amidship in feet.

Since 1983 the delivery rate has declined substantially, and future deliveries in 1985 and beyond are expected to decrease even more drastically. The draft distribution indicates that most of the vessels were below 35 feet in draft (24,000 DWT) throughout the 1969-84 time period.

Nearly one-fourth of the total tanker fleet DWT capacity is idle (Table 28). The most idle DWT group in the tanker fleet is 200,000+ DWT, and nearly one-half of 300,000+ DWT is idle. The current idle level is low (approximately 6 percent) for DWT groups lower than 150,000 DWT, except for the 70-80,000 DWT group, with 15 percent idle.

Over the 1 year period from August 1983 to August 1984 the total DWT of the operating oil fleet decreased from 225 million DWT to 219 million DWT (2.6 percent decrease) as shown in Table 29. The total tanker fleet declined during that time by 19 million DWT (6.5 percent) from 289.5 to 270.5 million DWT. The inactive tanker DWT also declined by 14 million DWT (18 percent), from 78.0 to 64.0 million DWT.

Employment of oil carriers discharging crude petroleum and its products in the United States decreased during the 1982-83 period (Table 30). On the eastern seaboard, employment decreased by 5.5 million DWT, or 15.2 percent, dropping from 36.9 to 31.4 million DWT. On the western seaboard, employment decreased by 5.7 million DWT, or 14 percent, dropping from 41.0 to 35.3 million DWT. The products carrier employment level stayed nearly constant at 5.5 million DWT through this period. Employment of crude oil carriers discharging to the U.S. is projected to decline by 2.3 million DWT (5.4 percent), from 42.3 to 40.0 million DWT, and product carrier employment is expected to increase by 5.1 million DWT (74 percent), from 6.9 to 12.0 million DWT, during the 1985-90 period (Table 31).

The demand for crude oil in the Far East is projected to increase by nearly 27 million short tons (7.3 percent), from 369 to 396 million short tons during the 1980-90 period (Table 32).

The estimated world-wide real demand for VLCC/ULCC is 100 million DWT in 1990, a 17 percent increase from 85.5 million DWT in 1984 (Table 33).

The total dry bulk carrier fleet DWT for 4,850 vessels as of August 1984 was 181.6 million DWT, with 8.3 million DWT (4.6 percent) idle (Table 34). Vessels above 100,000 DWT had the lowest percentage idle (1.1), and vessels in the

10-30,000 DWT and 80-100,000 DWT groups have the highest percentage idle (6.8).

As of August 1984, the fleet had 738 vessels that were wholly containerships, with nearly 906,700 TEUs of capacity (Table 35). There were 40 idle whole containerships (5.4 percent of total whole-containership fleet) with 37,800 TEUs of capacity (4.2 percent of total TEU capacity). There were 150 whole containerships on order, with 239,900 TEUs of capacity. This table also shows that there were 269 container RO/RO vessels with 236,000 TEUs of capacity. There were 12 idle container RO/RO vessels (4.5 percent of total) with 9,500 TEUs of idle capacity (4.0 percent of total). There were 78 container RO/RO vessels on order with 65,500 TEUs of capacity.

Oil and Dry Bulk Fleet Development 1980-84

Tanker fleet DWT has decreased steadily during the 1980-84 period by 53 million DWT (16 percent of 1980 DWT), from 324 million DWT to 271 million DWT (Table 36). New orders have declined also by 9 million DWT (45 percent of 1980 on-order DWT), decreasing from 20 to 11 million DWT. The combined-carriers DWT decreased from 48 to 45 million DWT during the same period, while new orders increased from 3 to 5 million DWT. Dry bulk carrier DWT increased from 136 to 182 million (34 percent increase) and new orders increased from 32 to 39 million DWT (22 percent increase).

The LPG fleet, on the other hand, has increased steadily from 6.2 to 7.9 million cu.m capacity (27 percent increase). The LNG fleet also increased from 5.6 to 6.9 million cu.m. (23 percent increase). LPG fleet orders held relatively constant (1.1 to 1.5 million cu.m), but the LNG fleet orders decreased substantially during the 1980-84 period, from 1.97 to 0.26 million cu.m (81 percent decrease).

The whole containership TEU capacity increased dramatically from 572,000 to 901,000 TEUs (59 percent increase) and container RO/RO ships also jumped, from 139,000 to 236,000, TEUs (70 percent increase) during the 1980-84 period. The orders for new whole containerships increased from 108,000 to 240,000 TEUs (122 percent increase). The orders for container RO/RO fleet fluctuated between 62,000 to 81,000 TEUs.

Vessel Operating Costs

The attractiveness of larger vessels is illustrated in Table 37 and Figure 24. The cost for a 37-foot draft dry

bulk carrier is 2.24 mils per metric ton-nautical mile. For a ship with a draft of 57 feet, the cost is 1.06 mills. Stated in another way, the cost per ton of a commodity such as coal, for every 1,000 miles of a voyage, is $2.24 for the 37-foot draft vessel and $1.06 for the 57-foot draft vessel--a savings of $1.18. On a 5,000 mile trip the savings would be $5.90 per ton for a commodity such as coal. For a tanker the logic is very similar, but the cost in mills per ton-mile for a tanker are slightly less than for a bulk carrier at comparable drafts. The 40-foot draft tanker has a cost of a 1.81 mills per ton mile, compared with 0.79 mills for a 73-foot draft tanker. This can be converted into a savings of $1.02 per ton of petroleum for each 1,000 miles of a voyage, or a little over $5.00 a ton for a 5,000-mile trip. From the graph in Figure 24, it can be seen that there is a declining amount of savings per foot of draft as the vessel draft is increased. Of course, the total cost for a voyage would have to include the costs in port for both loading and unloading, and these costs could affect the savings cited above. The example shown in Table 38 and Figure 25 illustrates the real world's recognition of the economy of scale by the charter fixture rates reported for various sizes of shipments and the related drafts for coal shipments from Hampton Roads to Europe. Table 37 shows an average rate of $10.70 per ton at a draft of 26-35 feet and an average rate of $6.04 per ton for shipments at a draft of 46-47 feet, or a difference of $4.64 per ton of coal.

FACTORS AFFECTING THE FUTURE FLEET

Freight Rates

The freight rates for 50,000 DWT of dry cargo under a 12-month time charter have experienced a precipitous drop from the height of nearly 200 (based on an index using 1970=100) in 1981 to 50-80 (index) during 1982-83 (Figure 26). In fact, the current level is close to the rate during 1976-78. The year 1983 was considered the worst ever in dry bulk shipping in terms of capital cost coverage. This was mainly due to a lower trade volume compared to 1982 and previous years.

VLCC and 60-80,000 DWT tanker rates hit the bottom during the 1982-83 period (Figure 27). Due to the recession during this period, the tonnage surplus dominated the VLCC market and pushed the rates down. Rates rose briefly during the summer of 1983 due to an increased demand for crude. The 60-80,000 DWT ships experienced a similar drop in rates during the recession period and a temporary rise in rates by August of 1983.

Restricted Draft Vessels

Due to the high cost of dredging harbors deeper and the associated environmental problems, one approach to lower vessel costs per ton of cargo is to change the ship design. One design change produces a restricted draft ship of greater DWT for the same draft by means of a wider beam than the conventional design. At a draft of 40 feet the conventional vessel would be about 55,000 DWT compared to about 90,000 DWT for the restricted draft vessel (Figure 28). The capital costs of the restricted draft vessels are about 1 to 3 percent higher than corresponding costs of conventional designs, but the required freight rate is about 12 percent less.[11] Several restricted draft vessels have been constructed in the past few years.

Off-shore Transfer

Another alternative to deepening a harbor is to use lightering or topping-off in off-shore transfer operations. This is not a new concept, but has been highly developed especially for coal shipping operations (Figure 29). This system partially loads a large bulk carrier at a coal dock and then moves that ship to a location in deeper water. The specially designed transfer barge or vessel is loaded at a coal dock and moved alongside the larger carrier. The coal is then transferred from the smaller vessel to the large carrier. This technique has been used for U.S. ports on the Gulf of Mexico and in the Gulf of St. Lawrence. There also are plans for offshore transfer to be used on the Atlantic coast.

OUTLOOK

The trend is very clear for all vessel types. Vessel construction and delivery has declined drastically in recent years, due primarily to the world-wide recession. The highest number of vessels was delivered in the 1974-78 period. Ship-on-order data shows a further decline in the number of vessels to be delivered in the next five years. The impact of these data on the DWT by vessel draft categories and annual cargo-carrying capacity awaits further research. Preliminary analysis based on ships on order through 1986 indicates a slight increase in total DWT for dry bulk carriers, a slight decrease in total DWT for combined carriers, and a substantial decrease in total DWT for tankers (Figure 30).

This type of information is useful for various planning purposes related to marine facilities and distribution systems. For full utilization of the data on the vessel

fleet, the total annual carrying capacity of the fleet by different vessel categories must be known. Information is needed regarding past and projected changes. This more extensive analysis would require conversion of the number of vessels by draft category into DWT for each category, with allowance for retirement of vessels. This in turn needs to be converted to annual carrying capacity based upon trade routes, time at sea (based on alternative vessel speeds), and time in port (based on alternative discharging and loading rates).

ACKNOWLEDGEMENTS

This paper was prepared with assistance from several persons at the Institute for Water Resources including the following: for general direction, James R. Hanchey, Director of the Institute, and Dr. Lloyd G. Antle, Chief, Navigation Division; for vessel characteristics data by computer from the Mardata Network, Mr. Frank M. Sharp, Chief of the Navigation Data and Applications Branch, and James G. Gould, Transportation Specialist.

Waterborne commerce data for 1983 (preliminary) and other data for Alaskan ports were provided by the Water Resources Support Center Waterborne Commerce Statistics Center, Mr. David Penick, Director and Messrs. Sidney Andrus and Gary Crowell.

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Table 1. Waterborne commerce at Alaskan primary ports by type of traffic, 1970-83 (in short tons)

Ports	Total	Foreign		Coastwise		Internal		
		Imports	Exports	Receipts	Shipments	Receipts	Shipments	Local
Anchorage Avg. (1970-81)	2,229,531							
Low (1979)	1,638,747	321,219	8,315	1,182,530	126,020	0	0	663
High (1976)	2,936,159	619,661	0	2,239,810	69,404	1,686	0	5,598
1982	1,998,185	100,360	52,792	1,706,806	138,227	0	0	0
1983	2,410,499	93,024	255,264	1,913,374	125,253	12,759	10,825	0
Dutch Hbr/Unalaska Avg. (1970-81)	343,466							
Low (1970) *	251,978	0	31	119,974	121,491	10,482	0	0
High (1981)	677,344	11,418	25,151	300,165	186,314	0	0	154,296
1982	745,799	1,819	6,658	340,634	224,375	0	0	172,213
1983	437,977	1,509	18,724	296,881	111,394	0	0	9,469
Ketchikan Avg. (1970-81)	1,991,645							
Low (1976)	1,559,067	23,025	209,035	225,611	178,657	698,855	156,273	67,611
High (1980)	2,767,173	596,070	456,424	423,200	47,816	868,283	239,347	136,033
1982	1,765,019	67,435	618,004	420,742	55,815	330,633	202,004	70,386
1983	1,792,276	225,363	610,859	304,329	52,854	395,893	178,414	24,564
Kodiak Avg. (1970-81)	341,434							
Low (1981) *	264,857	218	10,087	137,499	117,053	0	0	0
High (1979)	932,526	315	16,114	509,338	406,759	0	0	0
1982	236,427	0	16,719	149,324	70,384	0	0	0
1983	267,358	11	5,405	179,995	77,349	0	4,588	10
Metlakatla Avg. (1970-81)	202,731							
Low (1972) *	291,331	2	122,877	4,407	2,605	156,472	4,968	0
High (1980)	508,754	58	187,321	2,948	2,452	238,247	77,728	0
1982 *	119,585	0	24,480	3,219	1,952	48,789	41,145	0
1983	196,212	11,905	29,494	5,179	1,187	110,239	38,208	0
Nikishka Avg. (1970-81)	NA							
Low	NA	NA	NA	NA	NA	NA	NA	NA
High	NA	NA	NA	NA	NA	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA	NA	NA
1983	5,517,082	979	2,076,913	1,062,272	1,228,360	1,121,858	25,775	0
Sitka Avg. (1970-81)	857,037							
Low (1975)	387,510	750	130,385	91,722	12,883	130,969	20,801	0
High (1972)	1,243,437	5,211	189,615	993,402	51,089	2,941	1,126	53
1982	395,356	15,916	109,027	125,363	43,392	101,298	360	0
1983	508,260	81,637	167,179	49,685	30,086	178,603	1,070	0
Skagway Avg. (1970-81)	1,180,022							
Low (1979)	800,207	739,518	45,293	3,383	144	11,598	271	0
High (1974)	1,154,744	826,557	654,514	22,501	31	7,041	4,100	0
1982	510,027	220,244	279,001	1,175	0	9,466	141	0
1983	157,631	141,273	0	0	0	15,318	1,040	0
Valdez Avg. (1970-81)	25,443,946							
Low (1972)	253,505	0	0	155,971	92,077	2,679	2,778	0
High (1980)	85,973,086	0	0	169,879	85,803,207	0	0	0
1982	90,138,462	0	4,484	175,787	89,958,191	0	0	0
1983	92,744,095	0	1,411	123,609	92,596,183	22,892	0	0
Whittier Avg. (1970-81)	465,993							
Low (1979) *	257,417	NA	NA	NA	NA	NA	NA	NA
High (1971) *	713,290	NA	NA	NA	NA	NA	NA	NA
1982	385,065	27,565	9,554	331,920	16,026	0	0	0
1983	358,883	24,098	35,283	272,698	26,804	0	0	0
Wrangell Avg. (1970-81)	871,200							
Low (1979)	308,884	40	206,872	7,592	5,094	10,220	79,066	0
High (1970)	1,181,815	20,275	338,334	27,122	120,254	657,488	18,335	7
1982	595,296	5	452,859	10,826	1,609	74,321	55,676	0
1983	586,614	0	264,019	15,384	1,152	282,806	23,243	10

* Traffic by type is usually not available if commerce is below 250,000 tons or if their is no Federal harbor project. Nikishka and Whittier have no project. Lowest traffic for three ports fell below 250,000 tons: Dutch Harbor/Unalaska - 157,477 (1974), Kodiak - 124,479 (1970) and Metlakatla - 67,593 (1971).

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Parts 4 and 5, annual, 1970 - 1982. Data for 1983 are preliminary.

Table 2. Waterborne commerce at Alaskan secondary ports by total freight and major commodities, 1970-83 (in short tons)

Ports	Depth (Ft.)	Average (1970-81)	Low		High		1982	1983	Major Commodities (1982) [2]
			Amount	Year	Amount	Year			
Bethel [1]	25	90,752	40,680	1974	179,349	1980	96,105	90,842	PP(54), NM(30), S(7)
Cordova	20	44,927	27,001	1980	68,553	1971	28,384	31,947	PP(24)
Dillingham	14	23,057	5,491	1974	48,210	1979	42,834	27,963	PP(24), SC(5)
Homer	26	117,939	11,939	1974	189,748	1970	52,964	134,006	PP(11), F(11), CH(22)
Juneau	40	172,956	119,362	1970	224,245	1981	246,397	227,658	PP(91), SC(17), FM(6), ME(5), TE(5), FP(35), LP(48), S(19), NM(14)
Kake [1]	16	24,251	2,810	1976	73,033	1973	5,769	124,651	LP(118) in 1983
Nome	14	32,093	4,545	1978	56,418	1977	44,894	32,614	PP(31), S(6)
Petersburg	28	116,818	55,814	1976	294,103	1970	86,689	67,694	PP(21), LP(40)
Seward	40	121,070	29,309	1970	382,051	1975	137,118	40,923	PP(16), F(13), PM(95), FM(6)

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Parts 4 and 5, annual, 1970-1982. Data for 1983 are preliminary.

[1] Bethel and Kake had no reported traffic in 1970, 1971, and 1972.

[2] Commodity group abbreviations and thousands of tons of waterborne commerce (in parentheses) are shown as follows:

CH	Chemicals
F	Fish Products
FM	Fabricated Metal Products
FP	Food Products
LP	Lumber & Wood Products, Furniture, & Paper Products
ME	Machinery Except Electrical
NM	Non Metallic Minerals
PM	Primary Metal Products
PP	Petroleum Products
S	Special Items
SC	Stone, Clay, Glass, & Concrete Products
TE	Transportation Equipment

Table 3. Major commodities and types of traffic at Alaskan primary ports, 1982

Ports	Commodities, 1000 Tons of Waterborne Commerce, and Types of Traffic (2)
Anchorage	AG-40(CR), F-22(FE), FP-250(CR,CS), LP-227(CS,FE), CH-22(CR), PP-322(CR,FI,CS), SC-204(CR,FI), PM-83(CR,FI), FM-43(CR), ME-28(CR), TE-52(CR), MM-25(CS), S-647(CR,CS)
Dutch Harbor /Unalaska	PP-712(CR,CS,L)
Ketchikan	MO-51(FI), LP-1,064(FE,IR,L,CS), CH-45(CR), PP-507(CR,IS)
Kodiak (1)	FP-97(CS), PP-66(CR), S-59(CR,CS)
Metlakatla (1)	LP-503(IR,FE)
Nikishka	CP-2,150(IR,CR), PP-1,734(FE,CS), CH-944(FE)
Sitka	NM-21(CR), FP-20(CR,CS), LP-193(FE,IR), CH-30(CR), PP-72(CR,IR), S-27(CR,CS)
Skagway	MO-272(FE), PP-184(FI), S-27(CR,CS)
Valdez	CP-89,834(CS), PP-284(CR,CS)
Whittier	FP-39(CR), LP-77(CR,FI), CH-49(CR), PP-26(CR), SC-44(CR), PM-38(CR), FM-23(CR), ME-24(CR), S-31(CR)
Wrangell	LP-561(FE,IR,IS)

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4, 1980, 1981, and 1984.

(1) Latest years with information on types of traffic for Kodiak, Metlakatla, and Nikishka are 1981, 1980, and 1983 respectively. Metlakatla is actually a secondary port.

(2) Commodity group abbreviations, thousands of tons, and types of traffic, (in parentheses) are given. Commodity groups are:

AG	Farm Products	MM	Miscellaneous Manufacturing Products
CH	Chemicals	MO	Metallic Ores
CP	Crude Petroleum	NM	Non Metallic Minerals
F	Fish Products	PM	Primary Metal Products
FM	Fabricated Metal Products	PP	Petroleum Products
FP	Food Products	S	Special Items
LP	Lumber & Wood Products, Furniture, & Paper Products	SC	Stone, Clay, Glass, & Concrete Products
ME	Machinery Except Electrical	TE	Transportation Equipment

Types of traffic include: FI - Foreign Imports, FE - Foreign Exports, CR - Coastwise Receipts, CS - Coastwise Shipments, IR - Internal Receipt, IS - Internal Shipments, and L - Local.

Table 4. Alaska exports: worldwide totals - major products (value in thousands of dollars)

Product	1977	1978	1979	1980	1981	1982
Forest Products	179,056.5	168,537.7	284,159.7	339,064.5	278,313.1	277,531.1
Seafood Products	53,106.3	205,707.1	356,047.6	327,205.3	427,142.8	350,210.8
Natural Gas	95,325.6	111,442.0	122,536.0	218,044.4	310,024.5	291,898.0
Urea	20,059.1	59,837.6	73,719.5	87,481.3	133,417.2	109,724.4
Other	44,609.8	66,301.3	76,584.6	15,723.5	33,699.6	309,033.0
TOTAL:	392,157.3	611,825.7	913,047.4	987,519.0	1,182,597.2	1,338,397.3

Source: EM 563, United States Exports of Domestic and Foreign Merchandise
U.S. Department of Commerce, Bureau of the Census, Foreign Trade Division, Washington, D.C. 20230

Table 5. Value of Alaska exports: East Asia and Pacific 1977-1982 (thousand dollars)

COUNTRY	1977	1978	1979	1980	1981	1982
JAPAN	288,164.0	471,161.5	738,445.7	757,959.4	934,205.7	1,012,759.7
(Seafood)	(47,623.7)	(208,182.6)	(344,400.6)	(226,371.7)	(307,439.6)	(350,210.8)
(Forest Prod)	(141,337.1)	(135,770.5)	(236,369.5)	(270,885.7)	(205,381.9)	(221,077.9)
LNG/Chem)	(95,325.6)	(121,640.3)	(131,640.3)	(222,647.4)	(320,886.7)	(307,084.3)
CHINA	7,196.2	18,711.4	32,352.5	67,795.1	43,841.7	66,346.8
TAIWAN	8,573.6	8,090.6	12,096.4	14,600.6	16,916.0	4,438.8
KOREA	8,302.5	8,653.5	23,528.6	36,121.0	19,807.4	96,007.5
THAILAND	3,821.3	4,306.8	3,468.4	5,539.4	4,099.8	9,333.1
INDONESIA	0.0	1,102.4	1,188.4	10,942.4	2,969.5	23,907.5
PHILIPPINES	22.0	367.2	3,270.6	14,598.3	28,326.4	12,555.7
MALAYSIA	0.0	166.2	4,859.9	4,901.2	10,627.2	14,571.0
AUSTRALIA	1,173.4	6,965.5	18,318.6	3,069.0	9,096.0	33,576.6
OTHER	309.1	1,305.9	2,990.4	1,859.3	5,611.5	942.6
TOTAL	392,152.3	611,825.7	913,047.4	987,519.0	1,182,597.2	1,338,397.4

Source: EM 563, United States Exports of Domestic and Foreign Merchandise, U.S. Department of Commerce, Bureau of the Census, Foreign Trade Division, Washington, D.C. 20230

Table 6. Number of trips and drafts of vessels self-propelled dry cargo and passenger inbound and outbound at Alaskan primary ports, 1970([1])

Draft Range (Ft.)	Anchorage Depth: 35'		Dutch Hbr/ Unalaska Depth: 35'		Ketchikan Depth: 65'		Kodiak Depth: 40'		Metlakatla Depth: 35'		Sitka Depth: 36'		Skagway Depth: 43'		Valdez Depth: 150'		Wrangell Depth: 40'	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
35 - 39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 - 34	38	5	0	0	0	1	0	0	0	0	4	6	25	26	4	1	0	14
25 - 29	50	67	1	1	2	7	16	17	0	1	13	27	8	19	12	8	0	14
20 - 24	7	23	0	0	23	21	69	69	5	8	26	10	122	112	22	23	23	14
15 - 19	18	18	10	9	409	416	125	125	10	7	275	272	439	435	12	17	357	340
14 & <	351	349	694	695	3329	3323	1453	1454	1412	1410	2337	2337	6	6	136	138	2011	2008
Total	464	462	705	705	3763	3768	1663	1665	1427	1426	2655	2655	600	598	186	187	2391	2390

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4, and The Ports of Alaska, Port Series No. 38, Revised 1984. Data on Kodiak and Metlakatla are for 1975 and 1972 respectively.

(1) Depths are maximum controlling harbor depths at mean lower low water. The number of trips and drafts excluded towboats and tugboats, but included domestic fishing craft.

Table 7. Number of trips and drafts of self-propelled dry cargo and passenger vessels inbound and outbound at Alaskan primary ports, 1982([1])

Draft Range (Ft.)	Anchorage Depth: 35'		Dutch Hbr/ Unalaska Depth: 35'		Ketchikan Depth: 65'		Kodiak Depth: 40'		Metlakatla Depth: 35'		Sitka Depth: 36'		Skagway Depth: 43'		Valdez Depth: 150'		Wrangell Depth: 40'	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
35-39	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30-34	83	15	18	18	11	24	19	22	0	0	0	0	0	0	5	0	0	
25-29	149	215	7	6	64	78	51	35	0	0	60	72	108	112	11	10	11	28
20-24	10	8	38	43	56	60	18	30	10	23	27	26	28	24	2	1	17	5
15-19	22	27	157	141	1164	1139	143	144	5	1	256	242	275	271	208	208	484	479
14 & <	4	3	159	157	12897	12888	12	10	377	378	15	18	15	14	0	1	59	59
Total	269	269	379	375	14192	14189	243	241	392	402	358	358	426	426	221	220	571	571

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4, and The Ports of Alaska, Port Series No. 38, Revised 1984. Data on Kodiak and Metlakatla are for 1981 and 1980 respectively.

(1) Depths are maximum controlling harbor depths at mean lower low water. The number of trips and drafts excludes towboats, tugboats and domestic fishing craft.

Table 8. Number of trips and drafts of self-propelled tanker vessels inbound and outbound at Alaskan primary ports, 1970(1)

Draft Range (Ft.)	Anchorage Depth: 35'		Dutch Hbr/ Unalaska Depth: 35'		Ketchikan Depth: 65'		Kodiak Depth: 40'		Metlakatla Depth: 35'		Sitka Depth: 36'		Skagway Depth: 43'		Valdez Depth: 150'		Wrangell Depth: 40'	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
35-39	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-34	34	10	8	0	21	9	3	1	0	0	4	2	2	1	18	5	0	0
25-29	41	12	2	3	14	16	5	4	0	0	5	2	2	2	15	14	0	0
20-24	7	19	2	3	5	15	15	9	0	0	1	1	4	1	3	49	0	0
15-19	0	42	3	9	9	10	13	14	0	0	0	0	23	27	47	16	0	0
14 & <	3	3	12	12	0	0	0	8	1	1	3	7	13	14	0	0	0	0
Total	90	88	27	27	49	50	36	36	1	1	13	16	44	45	83	84	0	0

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4, and The Ports of Alaska, Port Series No. 38, Revised 1970. Data on Kodiak and Metlakatla are for 1975 and 1972 respectively.

(1) Depths are maximum controlling harbor depths at mean lower low water.

Table 9. Number of trips and drafts of self-propelled tanker vessels inbound and outbound at Alaskan primary ports, 1982(1)

Draft Range (Ft.)	Anchorage Depth: 35'		Dutch Hbr/ Unalaska Depth: 35'		Ketchikan Depth: 65'		Kodiak Depth: 40'		Metlakatla Depth: 35'		Sitka Depth: 36'		Skagway Depth: 43'		Valdez Depth: 150'		Wrangell Depth: 40'	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
70-74															0	103		
65-69															0	57		
60-64															1	70		
55-59															1	178		
50-54															0	169		
45-49															2	81		
40-44															153	156		
35-39	3	0	0	0	1	1	0	0	0	0	0	0	0	0	122	27	0	0
30-34	7	1	8	0	1	1	1	1	0	0	0	0	0	0	280	5	0	0
25-29	2	4	0	0	3	3	1	2	0	0	0	0	0	0	202	0	0	0
20-24	1	2	0	0	1	1	6	1	0	0	1	0	0	0	45	0	0	0
15-19	0	6	0	9	0	9	12	14	0	0	0	0	2	2	17	40	0	0
14 & <	0	1	3	0	12	2	2	5	0	0	1	1	0	0	66	2	0	0
Total	13	14	11	9	17	16	22	23	0	0	2	1	2	2	889	888	0	0

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4, and The Ports of Alaska, Port Series N 38, Revised 1984. Data on Kodiak and Metlakatla are for 1981 and 1980 respectively.

(1) Depths are maximum controlling harbor depths at mean lower low water.

Table 10. Barge traffic and number of vehicles and passengers at primary Alaskan ports, 1970 and 1982

	Dry Cargo Barges		Tank Barges		Ferry Vehicles		Total Passengers	
	1970	1982	1970	1982	1970	1982	1970	1982
Anchorage	129	188	109	15	303	0	1,954	0
Dutch Hbr/Unalaska	11	207	63	43	-	-	-	-
Ketchikan	1,184	1,045	229	459	8,663	82,825	40,397	393,573
Kodiak	15	14	4	8	-	-	12,350	13,312
Nikishka	<433	<99	<209	<48	-	-	<227	<1,604
Sitka	449	312	78	197	2,019	4,702	8,284	26,996
Skagway	1	6	15	37	3,896	10,722	61,715	91,859
Valdez	16	3	0	39	-	-	16,162	30,899
Whittier	395	1,841	45	18	-	-	13,449	21,730
Wrangell	349	448	105	162	3,174	4,028	11,672	17,014

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4. Data for Kodiak is from 1975 and 1981.

Table 11. Trips and drafts of vessels at Alaskan secondary ports, 1970 and 1982 (1)

Ports	Self Propelled Dry Cargo & Passengers Vessels		Dry Cargo Barges		Self Propelled Tank Vessels		Tank Barges		Passengers	
	1970	1982	1970	1982	1970	1982	1970	1982	1970	1982
Bethel (1)	1,434	50	90	164	0	36	37	72	6	0
Cordova	2,764	312	31	12	58	32	0	0	4,247	10,730
Dillingham	290	23	0	75	0	0	14	0	0	0
Homer	3,855	332	245	18	31	19	0	8	5,074	14,153
Juneau	5,257	1,272	191	223	55	37	59	130	52,984	82,052
Kake (1)	106	230	28	58	0	0	21	31	0	7,378
Metlakatla (1)	2,853	794	100	292	2	0	131	56	0	15,059
Nome	15	19	44	33	4	0	492	10	0	0
Petersburg	6,095	1,142	934	165	0	0	129	194	15,411	30,771
Seward	1,110	250	107	7	14	18	1	4	1,712	9,072

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Part 4. For Bethel and Kake 1973 is used in lieu of 1970. For Metlakatla 1972 and 1980 are used in lieu of 1970 and 1982. Petersburg uses 1971 passenger data in lieu of 1970.

(1) The number of trips and drafts excludes towboats and tugboats and domestic fishing craft.

Table 12. World seaborne trade 1970-1982 (million short tons)

YEAR	TOTAL	CRUDE OIL	OIL PRODUCTS	IRON ORE	COAL	GRAIN	OTHER
1970	2735	1098	270	272	111	98	886
1971	2840	1179	272	276	104	100	909
1972	3045	1306	288	272	106	119	954
1973	3439	1505	302	328	115	153	1036
1974	3580	1500	291	363	131	143	1152
1975	3358	1392	257	322	140	151	1096
1976	3664	1567	287	324	140	161	1185
1977	3771	1625	301	304	145	162	1234
1978	3847	1606	298	306	140	186	1311
1979	4138	1695	307	360	175	201	1400
1980	4020	1501	304	346	207	218	1444
1981	3863	1339	294	334	231	227	1438
1982(est)	3543	1152	267	300	223	223	1378

Source: OECD, MARITIME TRANSPORT 1982

Table 13. Crude petroleum and products movements to the U.S. by sea 1982, 1983 and projected for 1985 and 1990

ORIGIN	MILLION SHORT TONS/YEAR			
	1982	1983	1985	1990
MIDDLE EAST[1]	45.0	30.6	36.6	56.5
N. EUROPE[1]	33.3	29.3	38.5	37.5
CARIBBEAN	92.7	100.3	132.4	95.8
U.S. GULF	40.7	42.8	40.3	40.2
ALASKA[1]	82.9	78.5	82.9	82.9
N. AFRICA[1]	12.9	12.7	17.4	42.2
W. AFRICA[1]	38.3	29.2	51.0	46.5
S.E. ASIA	12.3	12.9	15.0	15.0
OTHER	12.2	12.3	17.7	21.3

Source: Drewry Shipping Consultants, Ltd; Prospects for U.S. Tanker Requirements, August 1984.

1. Includes some petroleum transshipped in the Caribbean but originating in the region indicated.

Table 14. Recent and projected U.S. coal trade[1] (million of short tons)

IMPORTING REGION	U.S. EXPORTS				
	1981	1983	1985	1990	1995
WESTERN EUROPE	53.0	31.0	38.5	38.5	52.5
JAPAN & PACIFIC RIM	31.0	22.0	25.0	25.5	36.0
CANADA	18.0	17.0	13.5	11.5	12.5
OTHER[2]	9.0	7.0	9.0	10.0	11.5
TOTAL	111.0	77.0	86.0	85.5	112.5

1. Projections use midpoint of ARC range

2. Not including Eastern Europe

Table 15. World coal trade forecasts by exporting nation 1985, 1990 and 1995[1] (million short tons)

EXPORTER	1985	1990	1995
UNITED STATES	86.0	85.5	112.5
AUSTRALIA	58.0	73.0	97.0
SOUTH AFRICA	40.5	66.0	77.5
POLAND	36.5	40.5	42.0
CANADA	29.5	46.5	65.0
COLOMBIA	2.0	17.0	20.0
OTHER[2]	26.5	38.5	52.5
TOTAL	279.0	367.0	466.5

1. Midpoint of Projection Ranges

2. Includes China and U.S.S.R.

Source: Appalachian Regional Commission, Revised Market Guide for Coal Exports from the United States, June 1984.

Table 16. World production of forest products 1973 and 1977 (million short tons)

TYPE	1973 PRODUCTION	1977 PRODUCTION			WORLD EXPORTS 1977	EXPORTS AS PERCENT OF PRODUCTION
		TOTAL	USA	CANADA		
ROUNDWOOD	1958.4	2032.2	266.9	113.6	90.3	4.4
SAWNWOOD	288.4	286.5	55.5	25.6	46.8	16.3
WOOD-BASED PANELS	67.3	69.8	19.9	3.3	10.6	15.2
WOOD PULP	126.2	127.5	46.8	19.5	18.7	14.7
PAPER AND PAPERBOARD	163.4	167.3	57.1	13.4	31.0	19.0
TOTAL FOREST PRODUCTS	2603.4	2683.3	446.2	175.4	197.4	7.4

Source: H.P. Drewry Shipping Consultants, Ltd; Deep Sea Trade and Transportation of Forest Products, June 1979, U.K.

Table 17. Projections of U.S. forest products exports (million short tons)

PRODUCT	1977	1980	1985	1990	1995	2000
Lumber & Wood Products	22.9	20.8	21.8	18.4	17.3	16.8
Pulp, Paper & Allied Products	5.0	5.4	6.2	6.6	7.22	7.7
Total	27.9	26.2	28.0	25.0	24.5	24.5

Source: Institute for Water Resources, National Waterways Study, "Evaluation of the Present Navigation System - Appendix A", March 1982.

Table 18. Tankers total number of vessels by delivery date and draft (ft) (month/year)

REP DWT(000)	DRAFT(FT)	00-59	01/59-00/64	01/64-00/69	01/69-00/74	01/74-00/79	01/79-00/84	01/84-10/84	TOTAL
<10	15-19.99	93	72	167	194	121	137	0	784
11	20-24.99	29	35	102	170	165	194	0	695
14	25-29.99	52	21	13	63	58	92	1	300
24	30-34.99	167	100	95	122	112	97	0	693
35	35-39.99	66	102	61	94	219	188	1	731
65	40-44.99	3	40	138	34	76	151	1	443
94	45-49.99	1	4	55	34	93	16	0	203
100	50-54.99	1	2	17	42	54	8	1	125
125	55-59.99	0	0	7	34	95	8	0	144
225	60-64.99	0	0	5	66	25	4	0	100
240	65-69.99	0	0	3	148	132	4	0	287
275	70-74.99	0	0	0	46	102	5	0	153
400	75-79.99	0	0	0	0	14	2	0	16
400+	80-84.99	0	0	2	2	6	0	0	10
400+	85-89.99	0	0	0	1	2	0	0	3
400+	90-94.99	0	0	0	2	5	0	0	7
400+	95-99.99	0	0	0	0	0	0	0	0
TOTAL		412	376	665	1052	1279	906	4	4694

Source: Mardata Network Ltd, Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 19. Tankers ships-on-order: total number of vessels by estimated delivery date and draft (ft)

REP DWT(000)	DRAFT (FT)	1983	1984	1985	1986	1987	1988	1989	TOTAL
<10	15-19.99	1	28	5	0	0	0	0	34
11	20-24.99	2	49	10	4	0	0	0	65
14	25-29.99	0	18	24	3	1	0	0	46
24	30-34.99	0	18	19	3	0	0	0	40
35	35-39.99	0	19	17	18	0	0	0	54
65	40-44.99	0	23	25	15	1	0	0	64
94	45-49.99	0	3	5	1	0	0	0	9
100	50-54.99	0	2	0	0	0	0	0	2
125	55-59.99	0	2	0	0	0	0	0	2
225	60-64.99	0	1	1	0	0	0	0	2
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-75.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-94.99	0	0	0	0	0	0	0	0
400+	95-99	0	0	0	0	0	0	0	0
TOTAL		3	163	106	44	2	0	0	318

Source: Mardata Network Ltd,Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 20. Dry bulk carriers: total number of vessels by delivery date and draft (ft) (month/year)

REP DWT(000)	DRAFT (FT)	00-59	01/59-00/64	01/64-00/69	01/69-00/74	01/74-00/79	01/79-00/84	01/84-10/84	TOTAL
<10	15-19.99	1	0	1	8	4	8	0	23
11	20-24.99	11	1	7	11	21	14	0	65
14	25-29.99	31	80	102	75	124	61	1	474
24	30-34.99	59	171	316	450	533	354	6	1889
35	35-39.99	3	78	289	298	310	306	11	1295
65	40-44.99	0	2	112	119	161	228	7	629
94	45-49.99	0	0	37	21	47	18	0	123
100	50-54.99	0	0	1	39	40	34	0	114
125	55-59.99	0	0	1	28	16	27	0	72
225	60-64.99	0	0	1	0	0	5	0	6
240	65-69.99	0	0	0	0	0	2	0	2
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-90	0	0	0	0	0	0	0	0
TOTAL		93	331	1566	1030	1231	1035	25	4604

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 21. Ships-on-order: dry bulk carriers total number of vessels by estimated delivery date and draft (ft)

REP DWT(000)	DRAFT(FT	1983	1984	1985	1986	1987	1988	1989	TOTAL
<10	15-19.99	0	0	0	0	0	0	0	0
11	20-24.99	0	9	2	0	0	0	0	11
14	25-29.99	0	8	8	0	0	0	0	16
24	30-34.99	0	151	121	31	1	0	0	304
35	35-39.99	1	167	148	40	0	0	0	355
65	40-44.99	0	68	29	11	0	0	0	108
94	45-49.99	0	5	1	2	1	0	0	9
100	50-54.99	0	3	7	3	0	0	0	13
125	55-59.99	0	7	9	4	0	0	0	20
225	60-64.99	0	1	2	1	0	0	0	4
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-94.99	0	0	0	0	0	0	0	0
400+	95-99	0	0	0	0	0	0	0	0
TOTAL		1	402	317	92	2	0	0	840

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 22. Containerships: total number of vessels by delivery date and draft (ft) (month/year)

REP DWT(000)	DRAFT(FT)	00-59	01/59-00/64	01/64-00/69	01/69-00/74	01/74-00/79	01/79--00/84	01/84-10/84	TOTAL
<10	15-19.99	1	8	8	54	32	14	8	117
11	20-24.99	2	6	4	32	59	52	0	155
14	25-29.99	17	19	23	21	51	54	0	185
24	30-34.99	28	32	77	130	127	77	0	471
35	35-39.99	0	0	5	63	46	91	0	205
65	40-44.99	0	0	0	15	11	16	0	42
94	45-49.99	0	0	0	0	0	0	0	0
100	50-54.99	0	0	0	0	0	1	0	1
125	55-59.99	0	0	0	0	0	0	0	0
225	60-64.99	0	0	0	0	0	0	0	0
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-94.99	0	0	0	0	0	0	0	0
400+	95-99	0	0	0	0	0	0	0	0
TOTAL		48	65	117	315	326	305	0	1176

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 23. Ships-on order: containerships total number of vessels by estimated delivery date and draft (ft)

REP DWT(000)	DRAFT(FT)	1983	1984	1985	1986	1987	1988	1989	TOTAL
<10	15-19.00	0	2	0	0	0	0	0	2
11	15-19.99	0	8	8	1	0	0	0	17
14	25-29.99	0	17	11	4	0	0	0	32
24	30-34.99	0	10	11	6	2	0	0	29
35	35-39.99	0	35	20	6	0	0	0	61
65	40-44.99	0	3	0	0	0	0	0	3
94	45-49.99	0	0	0	0	0	0	0	0
100	50-54.99	0	0	0	0	0	0	0	0
125	55-59.99	0	0	0	0	0	0	0	0
225	60-64.99	0	0	0	0	0	0	0	0
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0				
TOTAL		0	75	50	17	12	0	0	144

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 24. RO-RO vessels: total number of vessels by delivery date and draft (ft) (month/year)

REP DWT(000)	DRAFT (FT)	PRE 1959	01/59-00/64	01/64-00/69	01/69-00/74	01/74-00/79	01/79-00/84	01/84-10/84	TOTAL
<10	15-19.99	39	31	87	193	168	116	0	634
11	20-24.99	4	1	9	73	131	93	1	312
14	25-29.99	6	0	2	13	39	39	0	99
24	30-34.99	3	0	8	13	26	37	1	88
35	35-39.99	0	0	0	0	0	22	1	33
65	40-44.99	0	0	0	0	0	0	0	0
94	45-49.99	0	0	0	0	0	0	0	0
100	50-50	0	0	0	0	0	0	0	0
TOTAL		52	32	106	292	374	307	3	1166

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 25. Ships-on-order: RO-RO vessels total number of vessels by estimated delivery date and draft (ft)

REP DWT(000)	DRAFT(FT)	1983	1984	1985	1986	1987	1988	1989	TOTAL
<10	15-19.99	0	24	11	4	0	0	0	39
11	20-24.99	1	21	16	6	2	0	0	46
14	25-29.99	0	9	4	1	0	0	0	14
24	30-34.99	0	2	3	2	1	0	0	8
35	35-39.99	0	7	4	0	0	0	0	11
65	40-44.99	0	0	0	0	0	0	0	0
94	45-49.99	0	0	0	0	0	0	0	0
100	50-54.99	0	0	0	0	0	0	0	0
125	55-59.99	0	0	0	0	0	0	0	0
225	60-64.99	0	0	0	0	0	0	0	0
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-94.99	0	0	0	0	0	0	0	0
400+	95-99	0	0	0	0	0	0	0	0
TOTAL		1	63	38	13	3	0	0	118

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 26. General cargo freighters: total number of vessels by delivery date and draft (ft) (month/year)

REP DWT(000)	DRAFT(FT)	00-59	01/59-00/64	01/64-00/69	01/69-00/74	01/74-00/79	01/79-00/84	01/84-10/84	TOTAL
<10	15-19.99	492	393	545	492	499	360	1	2782
11	20-24.99	523	453	755	833	633	508	0	3705
14	25-29.99	565	459	567	605	639	403	1	3239
24	30-34.99	155	359	395	503	576	310	0	2298
35	35-39.99	2	10	16	33	34	22	0	117
65	40-44.99	0	1	3	3	1	4	0	12
94	45-49.99	0	0	0	0	2	0	0	2
100	50-54.99	0	0	0	1	0	0	0	1
125	55-59.99	0	0	0	0	0	0	0	0
225	60-64.99	0	0	0	0	0	0	0	0
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-94.99	0	0	0	0	0	0	0	0
400+	95-99	0	0	0	0	0	0	0	0
TOTAL		1737	1675	2281	2470	2384	1607	2	12,156

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 27. Ships-on-order: general cargo freighters: total number of vessels by estimated delivery date and draft (ft)

REP DWT(000)	DRAFT(FT)	1983	1984	1985	1986	1987	1988	1989	TOTAL
<10	15-19.99	1	55	8	0	0	0	0	64
11	20-24.99	5	131	34	2	0	0	0	172
14	25-29.99	1	76	29	4	2	2	2	116
24	30-34.99	2	60	51	19	1	0	0	133
35	35-39.99	0	4	4	0	0	0	0	8
65	40-40.99	0	2	0	0	0	0	0	2
94	45-49.00	0	0	0	0	0	0	0	0
100	50.54.99	0	0	0	0	0	0	0	0
125	55-59.99	0	0	0	0	0	0	0	0
225	60-64.99	0	0	0	0	0	0	0	0
240	65-69.99	0	0	0	0	0	0	0	0
275	70-74.99	0	0	0	0	0	0	0	0
400	75-79.99	0	0	0	0	0	0	0	0
400+	80-84.99	0	0	0	0	0	0	0	0
400+	85-89.99	0	0	0	0	0	0	0	0
400+	90-94.99	0	0	0	0	0	0	0	0
TOTAL		9	328	126	25	3	12	2	495

Source: Mardata Network Ltd., Stanford, Conn., WRSC-IWR Terminal Printout, 5 November 1984.

Table 28. Tanker fleet August 1984 (million DWT)

SIZE GROUP DWT(000)	31/08/84 FLEET TOTAL	ACTIVE	IDLE	IDLE %
10-20	5.0	4.7	0.3	6.0
20-30	10.0	9.2	0.8	8.0
30-40	14.9	14.0	0.9	6.0
40-50	3.8	3.5	0.3	7.9
50-60	8.0	7.3	0.7	8.8
60-70	9.2	8.4	0.8	8.7
70-80	5.9	5.0	0.9	15.3
80-90	17.4	16.5	0.9	5.2
90-100	8.6	7.9	0.7	8.1
100-125	11.7	10.9	0.8	6.8
125-150	17.9	16.9	1.0	5.6
150-175	9.2	7.8	1.4	15.2
175-200	3.1	3.1	-	-
200-225	6.3	4.5	1.8	28.6
225-300	99.5	65.0	34.5	34.7
300+	40.0	21.8	18.2	45.5
Total	270.5	206.5	64.0	23.7

Source: Drewry Shipping Consultants Ltd., Shipping Statistics and Economics, No. 167, September 1984, London, England.

Table 29. The oil fleet 1983-1984 (million DWT)

	1983	1984			
	AUG	MAR	MAY	JUL	AUG
Tanker Fleet at start of month	289.5	279.2	278.1	273.4	271.7
+ Deliveries in month	0.0	0.0	0.2	0.2	0.2
- Scrappings and Losses in month	0.0	0.9	2.2	1.9	1.4
Tanker Fleet at end of month					
10-40	-	30.7	30.4	30.0	29.9
40-90	-	45.2	44.9	44.6	44.3
90-175	-	48.2	47.9	47.7	47.4
175+	-	154.3	152.9	149.4	148.9
Total	289.5	278.3	276.1	271.7	270.5
Inactive Tankers	78.0	73.6	72.0	67.8	64.0
Tankers Trading	211.5	204.7	204.1	203.9	206.5
+ Combined carriers	13.5	12.8	9.9	12.5	12.2
Operating Oil Fleet	225.0	217.5	214.0	216.4	218.7

Source: Drewry Shipping Consultants Ltd., Shipping Statistics and Economics, No. 167, September 1984, London, England.

Table 30. Historical total oil carrier employment discharging in U.S.: crude and products (million DWT)

	VESSEL SIZE CATEGORY (000 DWT): 10-45		45-90		90-175		175+		TOTAL	
YEAR:	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983
TO EASTERN SEABOARD LOADING AT:										
ARABIAN GULF										
CRUDE	-	-	0.2	0.2	0.9	0.9	11.5	8.8	12.6	9.9
PRODUCTS	-	0.1	0.1	0.1	-	-	-	-	0.1	0.2
NORTH EUROPE										
CRUDE	0.1	-	0.1	0.8	2.2	1.4	1.1	0.6	3.5	2.8
PRODUCTS	0.2	0.2	-	-	-	-	-	-	0.2	0.2
CARIBBEAN										
CRUDE	0.7	0.6	7.1	6.2	1.7	1.5	0.4	0.4	9.9	8.7
PRODUCTS	1.1	1.0	0.9	0.8	-	-	-	-	2.0	1.8
U.S. GULF										
CRUDE	0.1	0.2	-	-	-	-	-	-	0.1	0.2
PRODUCTS	1.7	1.8	-	-	-	-	-	-	1.7	1.8
ALASKA										
CRUDE	-	-	-	-	-	-	2.5	2.3	2.5	2.3
PRODUCTS	-	-	-	-	-	-	-	-	-	-
WEST AFRICA										
CRUDE	-	-	0.2	0.2	2.7	2.1	2.6	2.0	5.5	4.3
PRODUCTS	-	-	-	-	-	-		-	-	-
NORTH AFRICA										
CRUDE	-	-	0.5	0.5	0.5	0.5	-	-	1.0	1.0
PRODUCTS	0.2	0.2	0.2	0.2	-	-	-	-	0.4	0.4
OTHER										
CRUDE	0.3	0.4	0.5	0.8	0.4	0.6	0.6	0.4	2.8	2.2
PRODUCTS	0.5	0.4	0.1	0.1	-	-	-	-	0.6	0.5
SUB-TOTAL										
CRUDE	1.2	1.2	8.6	8.7	8.4	7.0	18.7	14.5	36.9	31.4
PRODUCTS	3.7	3.7	1.3	1.2	-	-	-	-	5.0	4.9

Table 30. (continued)

VESSEL SIZE CATEGORY (000 DWT):	10-45		45-90		90-175		175+		TOTAL	
YEAR:	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983
TO WESTERN SEABOARD LOADING AT:										
ALASKA										
CRUDE	-	-	0.9	0.9	0.3	0.3	0.6	0.6	1.80	1.80
PRODUCTS	-	-	-	-	-	-	-	-	-	-
S.E. ASIA										
CRUDE	-	-	0.2	0.2	1.8	1.7	-	-	2.0	1.9
PRODUCTS	-	0.2	-	-	-	-	-	-	-	0.2
OTHER										
CRUDE	-	-	-	-	0.2	0.2	0.1	-	0.3	0.2
PRODUCTS	0.5	0.4	-	-	-	-	-	-	0.5	0.4
SUB-TOTAL										
CRUDE	-	-	1.1	1.1	2.3	2.2	0.7	0.6	4.1	3.9
PRODUCTS	0.5	0.6	-	-	-	-	-	-	0.5	0.6
TOTAL										
CRUDE	1.2	1.2	9.7	9.8	10.7	9.2	19.4	15.1	41.0	35.3
PRODUCTS	4.2	4.3	1.3	1.2	-	-	-	-	5.5	5.5

* Includes employment engaged in the first leg of transshipment and discharging at the Caribbean transshipment terminals.

Source: Drewry Shipping Consultants, Ltd., Prospects for U.S. Tanker Requirements, August 1984, London, England

Table 31. Forecast total oil carrier employment discharging in U.S.: crude and products (million DWT)

VESSEL SIZE CATEGORY (000 DWT):	10-45		45-90		90-175		175+		TOTAL	
YEAR:	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990
TO EASTERN SEABOARD LOADING AT:										
ARABIAN										
CRUDE	-	-	0.2	0.2	0.8	0.8	7.6	6.5	8.6	7.5
PRODUCTS	-	-	0.2	3.7	-	-	-	-	0.2	3.7
NORTH EUROPE										
CRUDE	-	-	1.1	1.0	1.8	1.7	0.7	0.7	3.6	3.4
PRODUCTS	0.2	0.2	0.2	0.2	-	-	-	-	0.4	0.4
CARIBBEAN										
CRUDE	0.8	0.9	7.6	8.8	1.8	2.1	0.5	0.5	10.7	12.3
PRODUCTS	1.1	0.6	1.1	-	-	-	-	-	2.2	0.6
U.S. GULF										
CRUDE	0.1	-	-	-	-	-	-	-	0.1	-
PRODUCTS	1.7	1.7	-	-	-	-	-	-	1.7	1.7
ALASKA										
CRUDE	-	-	-	-	-	-	2.5	2.5	2.5	2.5
PRODUCTS	-	-	-	-	-	-	-	-	-	-
WEST AFRICA										
CRUDE	-	-	0.2	0.2	3.9	3.3	3.7	3.1	7.8	6.6
PRODUCTS	-	-	-	-	-	-	-	-	-	-
NORTH AFRICA										
CRUDE	-	-	0.7	-	0.7	-	-	-	1.4	-
PRODUCTS	0.2	0.2	0.3	3.4	-	-	-	-	0.5	3.6
OTHER										
CRUDE	0.2	0.2	0.6	0.8	0.6	0.7	0.5	0.7	1.9	2.4
PRODUCTS	0.8	0.6	0.3	0.6	-	-	-	-	1.1	1.2
SUB-TOTAL										
CRUDE	1.1	1.1	10.4	11.0	9.6	8.6	15.5	14.0	36.6	34.7
PRODUCTS	4.0	3.3	2.1	7.9	-	-	-	-	6.1	11.2

Table 31. (continued)

VESSEL SIZE CATEGORY (000 DWT):	10-45		45-90		90-175		175+		TOTAL	
YEAR:	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990
TO WESTERN SEABOARD LOADING AT:										
ALASKA										
CRUDE	-	-	0.9	0.9	0.3	0.3	0.6	0.6	1.8	1.8
PRODUCTS	-	-	-	-	-	-	-	-	-	-
S.E. ASIA										
CRUDE	-	-	0.3	0.3	2.3	2.3	-	-	2.6	2.6
PRODUCTS	0.2	0.2	-	-	-	-	-	-	0.2	0.2
OTHER										
CRUDE	-	0.1	0.3	-	0.6	0.5	0.4	0.3	1.3	0.9
PRODUCTS	0.6	0.6	-	-	-	-	-	-	0.6	0.6
SUB-TOTAL										
CRUDE	-	0.1	1.5	1.2	3.2	3.1	1.0	0.9	5.7	5.3
PRODUCTS	0.8	0.8	-	-	-	-	-	-	0.8	0.8
TOTAL										
CRUDE	1.1	1.2	11.9	12.2	12.8	11.7	16.5	14.9	42.3	40.0
PRODUCTS	4.8	4.1	2.1	7.9	-	-	-	-	6.9	12.0

* Includes employment engaged in the first leg of transshipment and discharging at the Caribbean transshipment terminals.

Source: Drewry Shipping Consultants, Ltd., Prospects for U.S. Tanker Requirements, August 1984, London, England

Table 32. World seaborne movements to Far East 1980, 1982, 1985, 1990: crude oil (million short tons)

YEAR	TO JAPAN	TO OTHER FAR EAST: INDIAN SUB-CONT.	TO OTHER FAR EAST: S. EAST ASIA	TO OTHER FAR EAST: AUSTRA-LASIA	TOTAL
1980	228	30	99	12	369
1982	189	20	99	15	323
1985	207	28	138	11	384
1990	216	34	135	11	396

Source: Drewry Shipping Consultants, Ltd., The Role of VLCCs in the 1980s, 1984, London, England

Table 33. Forecast VLCC/ULCC demand, 1984-1990 (million DWT)

	1984	1986	1988	1990
1. Projected employment at 1980 efficiency	117.2	127.3	139.2	137.3
Avoidable inefficiencies:				
2. Reduced deadfreight	4.7	5.1	5.6	5.5
3. Increased Speed	27.0	29.3	32.0	31.6
4. Total (2+3)	31.7	34.4	37.6	37.1
5. Forecast real demand	85.5	92.9	101.6	100.2

2 = 4% Avoidable deadfreight in 1980 x Line 1
3 = 23% Avoidable slow steaming in 1980 x Line 1

Source: Drewry Shipping Consultants, Ltd., The Role of VLCCs in the 1980s, 1984, London, England

Table 34. Dry bulk carrier fleet August 84* (000 DWT and number of vessels)

(000 DWT) SIZE	NO. OF VESSELS	TOTAL	ACTIVE	IDLE	IDLE %
10 - 30	2,579	55,950	52,154	3,796	6.8
30 - 50	1,974	47,826	1,279	45,852	4.1
50 - 80	1,944	45,987	735	44,043	4.2
80 - 100	273	4,029	47	3,756	6.8
100+	210	27,828	27,527	301	1.1
TOTAL	4,850	181,620	178,332	8,288	4.6

* Including Ore Carriers

Source: Drewry Shipping Consultants, Ltd., Shipping Statistics and Economics, No. 167, September 1984, London, England.

Table 35. World containership fleet, August 1984 (a)

TYPES/TEU	ACTIVE NO. SHIPS	ACTIVE TEU (000)	IDLE NO. SHIPS	IDLE TEU (000)	TOTAL NO. SHIPS	TOTAL TEU (000)	ORDERBOOK NO. SHIPS	ORDERBOOK TEU (000)	ORDERBOOK OF CURRENT FLEET
Full Container(b)									
400 - 700	144	77.4	12	6.2	156	83.6	38	18.0	21.5
700 - 1,000	130	109.7	7	6.7	137	116.4	16	12.3	10.6
1,000 - 1,500	205	251.2	16	17.2	221	268.7	30	37.6	14.0
1,500 - 2,000	159	271.2	3	4.9	162	276.1	16	26.8	9.7
2,000+	60	159.1	2	2.8	62	161.9	50	145.2	89.7
TOTAL F/C	698	868.9	40	37.8	738	906.7	150	239.9	26.5
Cont. Ro/Ro (c)									
400 - 700	113	55.5	5	2.3	118	57.8	41	17.7	30.6
700 - 1,000	56	44.3	2	1.7	58	46.0	10	8.9	19.3
1,000 - 1,500	65	81.9	5	5.5	70	87.4	18	21.4	24.5
1,500+	23	44.8	-	-	23	44.8	9	17.5	39.1
TOTAL C-RO/RO	257	226.5	12	9.5	269	236.0	78	65.5	27.8
TOTAL FLEET	955	1,095.4	52	47.3	1,007	1,142.7	228	305.4	26.7

(a) Excludes vessels less than 400 TEU.
(b) Includes barge carriers.
(c) Includes pure RO/RO and RO/RO containerships of TEU+.

* Based on TEUs.

Source: Drewry Shipping Consultants, Ltd., Shipping Statistics and Economics, No. 167, September 1984, London, England.

Table 36(a). Oil and dry-bulk fleet development 1980-1984* (millions DWT)

SHIP TYPE	1980	1981	1982	4Q 83	AUG. 84 NO. SHIPS	AUG. 84 DWT (MILLION)
Tanker Fleet	324	320	303	281	2,741	271
Orders	20	13	11	11	204	11
% on Order	6	4	4	4	7	4
Combined Carriers	48	48	47	46	380	45
Orders	3	4	3	3	45	5
% on Order	24	27	18	21	17	21
Dry Bulk Carriers	136	151	165	174	4,850	182
Orders	32	41	29	37	824	39
% on Order	24	27	18	21	17	21

Table 36(b). LPG and LNG fleet development 1980-1984 (1,000 cubic metres)

SHIP TYPE	1980	1981	1982	4Q 83	AUG 84 NO. SHIPS	AUG 84 CU. M (000)
LPG Fleet	6,248	6,628	7,306	7,756	529	7,922
Orders	1,229	1,493	1,132	1,098	65	1,342
% on Order	20	23	15	14	12	17
LNG Fleet	5,649	5,658	6,176	6,552	77	6,927
Orders	1,972	1,588	1,008	860	2	258
% on Order	35	28	16	13	3	4

Tablea 36(c). Container fleet development 1980-1984 (1,000 TEUs)

SHIP TYPE	1980	1981	1982	4Q 83	AUG. 84 NO. SHIPS	AUG. 84 TEU (000)
Full Containers	572	637	737	823	738	907
Orders	108	132	243	250	150	240
% on Orders	19	21	33	30	20	26
Cont/Ro-Ro Fleet	139	183	198	211	269	236
Orders	62	71	81	73	78	66
% on Orders	45	39	41	35	29	28

* Data are for the end of period shown.

Source: Drewry Shipping Consultants, Ltd., Shipping Statistics and Economics, No. 167, September 1984, London, England.

Table 37. Dry-bulk carrier and tanker costs per ton-nautical-mile at various vessel drafts(1)

Max Vessel Draft		DWT (000)	Vessel Cost	
		Long Tons	Mills per	Mills per
Ft.	Meters		m.t. (2)	s.t. (3)
Dry	Bulk Carrier			
37	11.3	35	2.24	2.03
41	12.5	50	1.73	1.57
46	14.0	80	1.51	1.37
49	14.9	100	1.33	1.21
52	15.8	120	1.18	1.07
57	17.4	150	1.06	0.96
Tanker				
40	12.2	50	1.81	1.64
42	12.8	70	1.64	1.45
46	14.0	90	1.40	1.27
52	15.9	120	1.15	1.04
62	18.9	200	0.95	0.86
67	20.4	265	0.85	0.77
73	22.3	325	0.79	0.72

(1) U.S. Army Corps of Engineers, based on 1981 data supplied by the Dept. of Transportation, Maritime Administration.

(2) Mills per tonne-nautical mile or dollars per 1,000 tonne-nautical miles where tonne is a metric ton equivalent to 2204.6 pounds or 1.1 short tons.

(3) Mills per short ton-nautical mile or dollars per 1,000 short ton-nautical miles.

Table 38. Coal export voyage charter rates, by shipment size and estimated draft, Hampton roads to U.K. and continental Europe, January-June 1982

Shipment Size (1) (1,000 long tons)	Number of Shipments Reported (1)	Estimated Draft (2) (Ft)	Average Rates (3) ($/long ton)
26-35	6	34-39	10.70
50-57	5	40-41	8.71
60.65	14	42-43	8.16
66-79	11	44-45	7.25
80-93	11	46-47	6.04

(1) Source: Mardata Network Ltr., Stamford, Conn., Charter Fixture Library, "Dry Cargo Voyage Fixtures for Coal Exports from U.S. North Atlantic Ports to United Kingdom and Atlantic Continental Europe", WRSC-IWR Terminal Printout, 2 July 1982.

(2) Estimated draft is based on draft and deadweight data for 15,000 to 175,000 DWT vessels by Office of the Chief of Engineers, Planning Division, reported in the Interim Report of the Interagency Coal Export Task Force, Jan. 1981, p. 85. Maximum cargo is based upon 93 percent of DWT.

(3) Calculated from data in source listed in footnote (1).

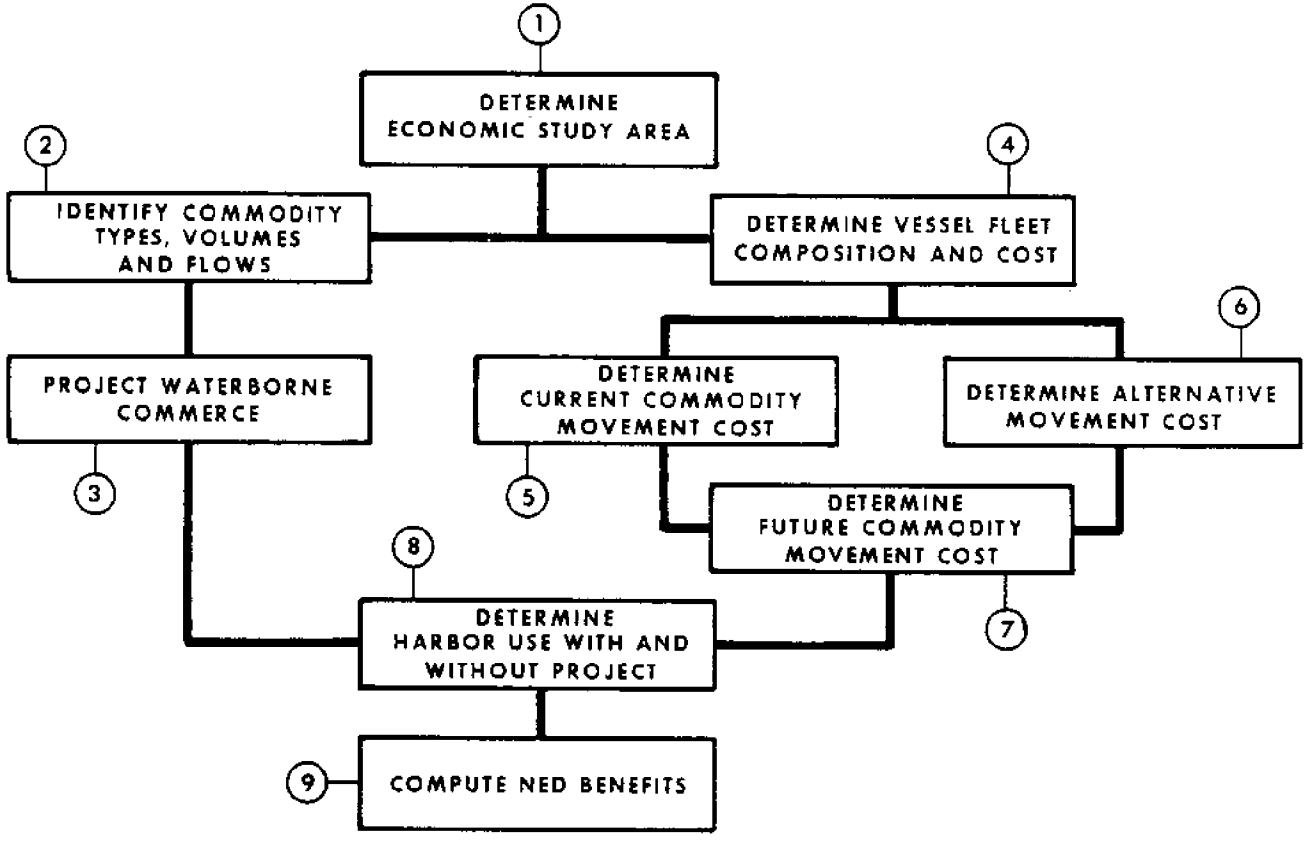


Figure 1. Flow chart of deep-draft navigation evaluation procedures.

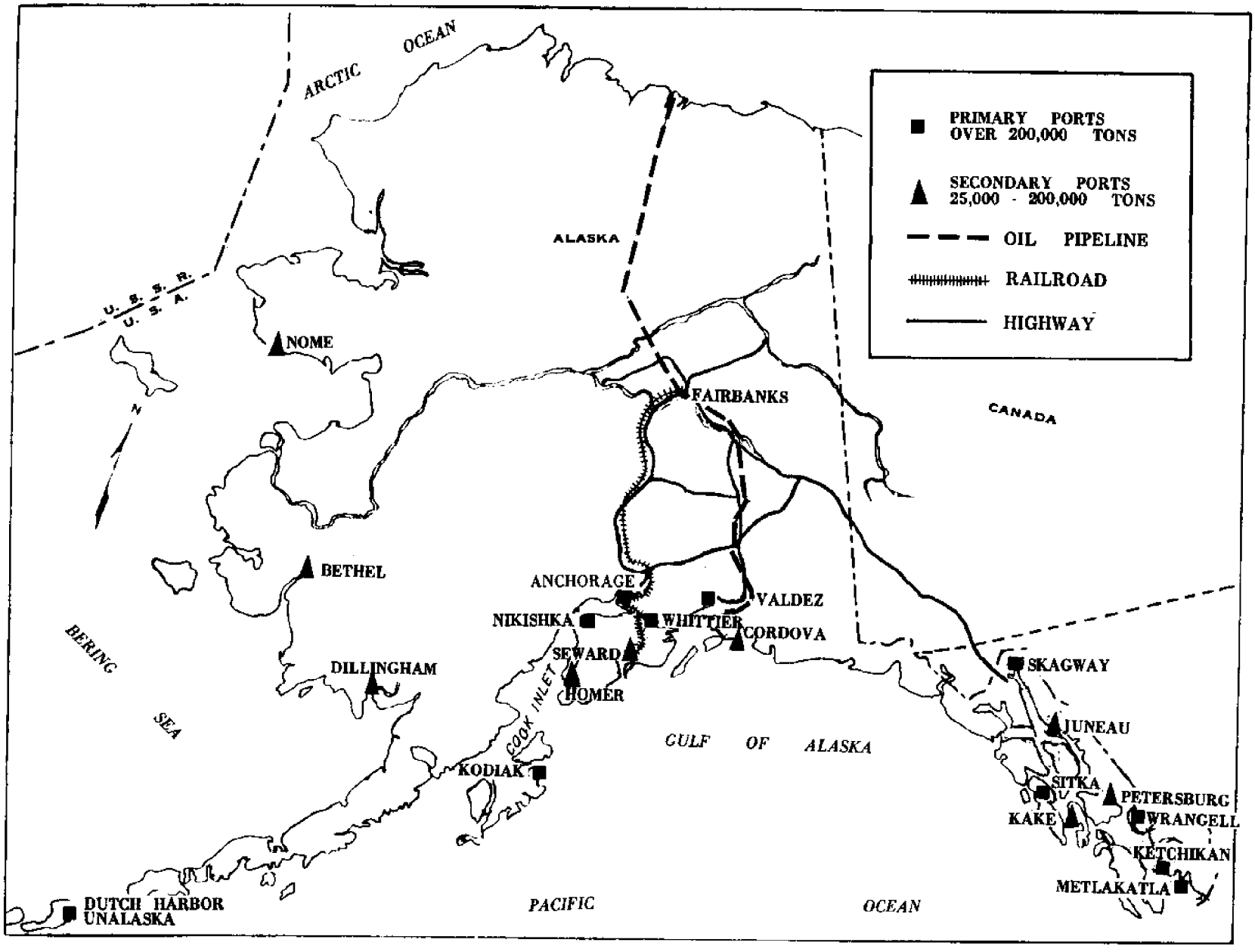


Figure 2. Alaska ports.

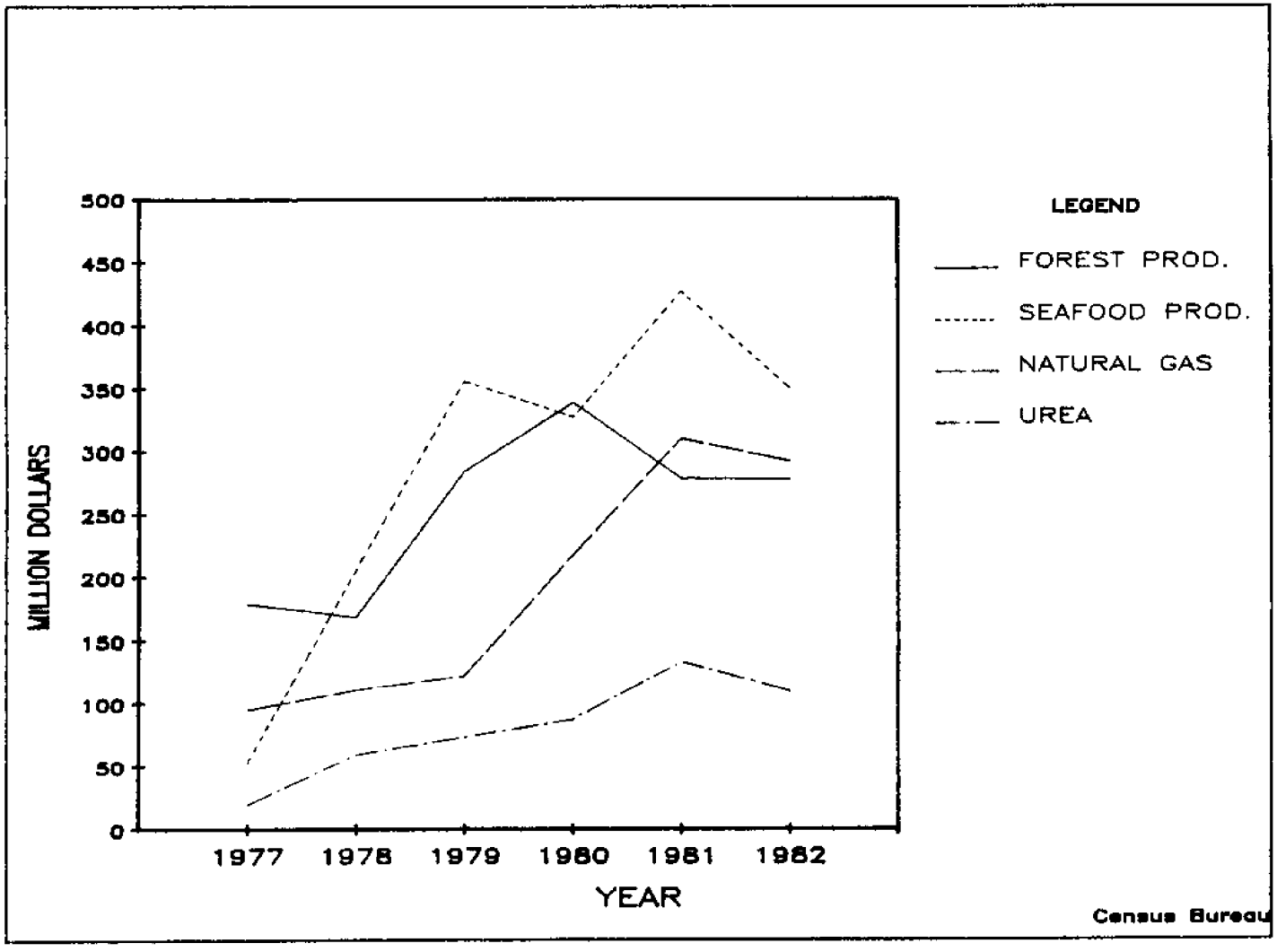


Figure 3. Value of major Alaskan exports 1977-1982.

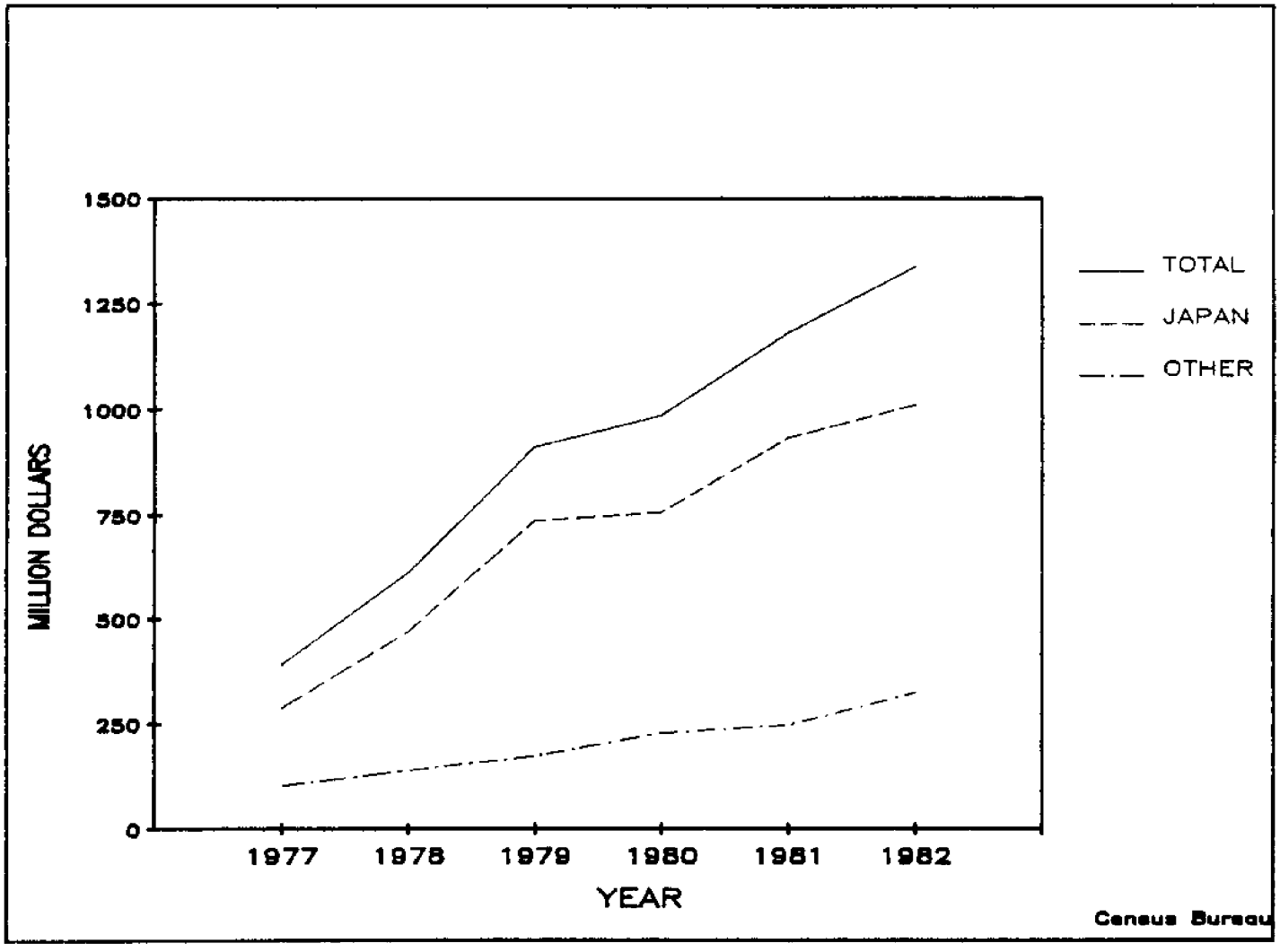


Figure 4. Alaskan exports: East Asia and Pacific 1977-1982.

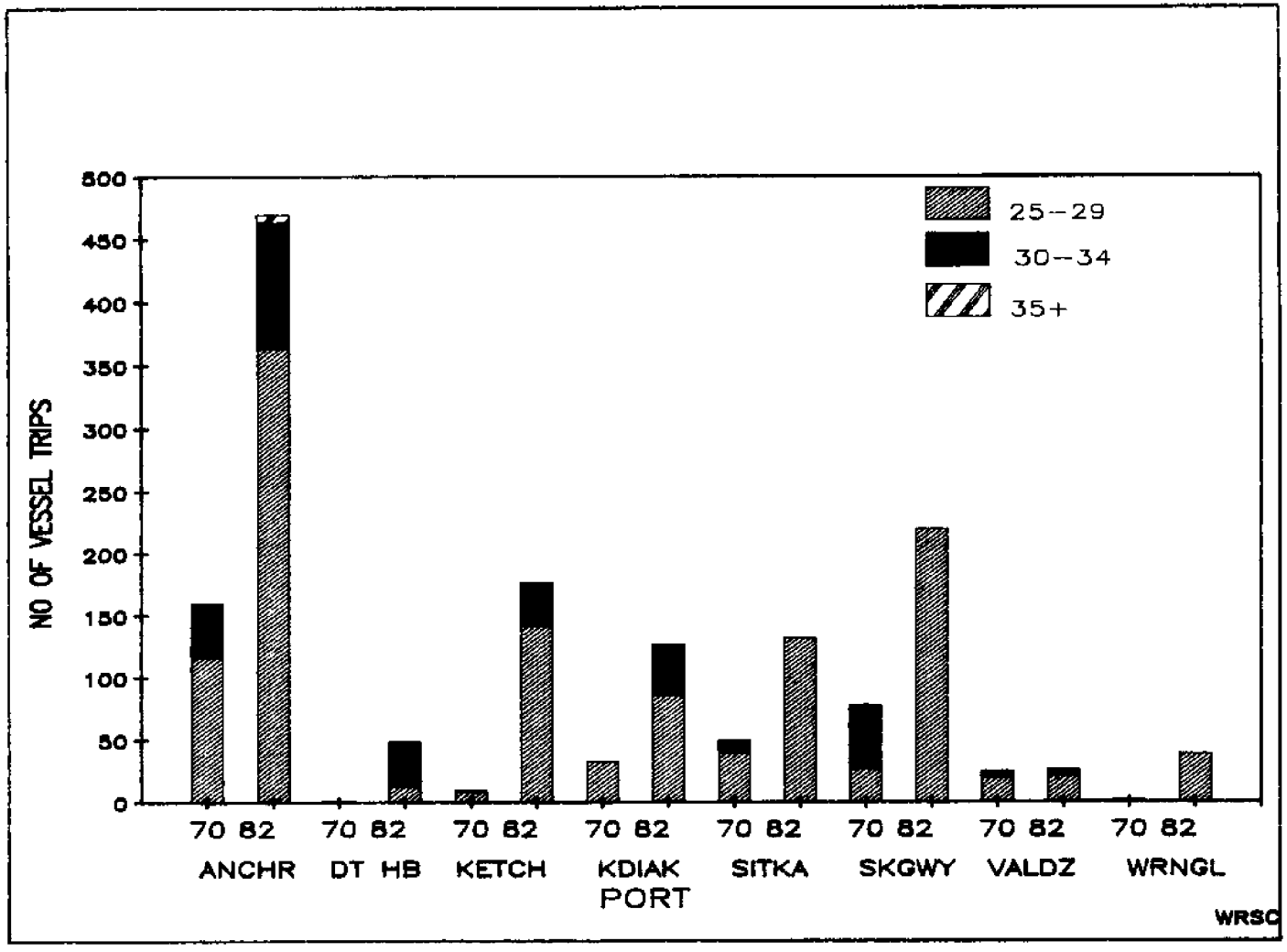


Figure 5. Deep draft dry cargo and passenger vessels of 25+ feet at Alaskan primary ports, 1970 and 1982.

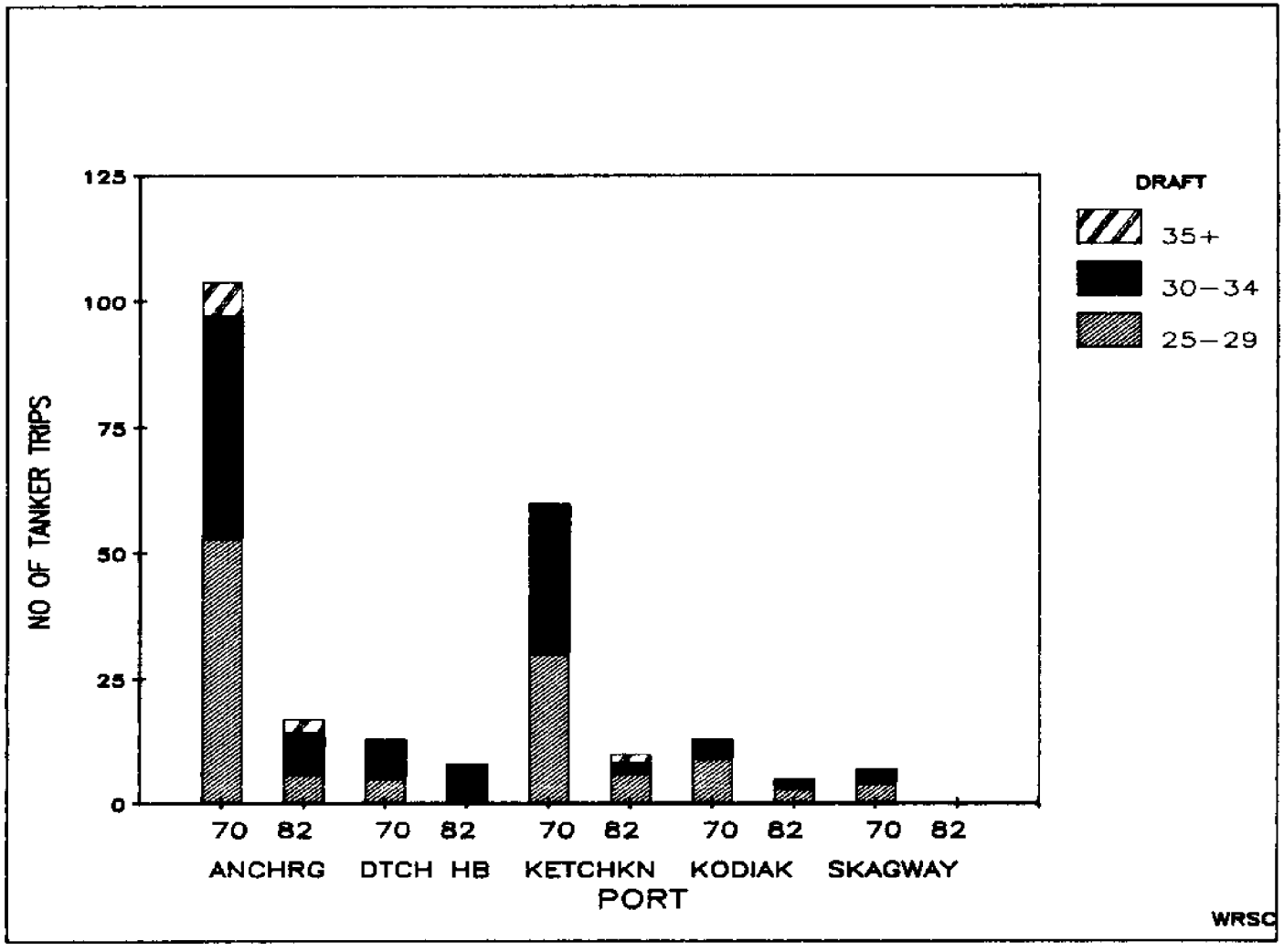


Figure 6. Deep draft tanker vessels of 25+ feet at Alaskan primary ports 1970 and 1982.

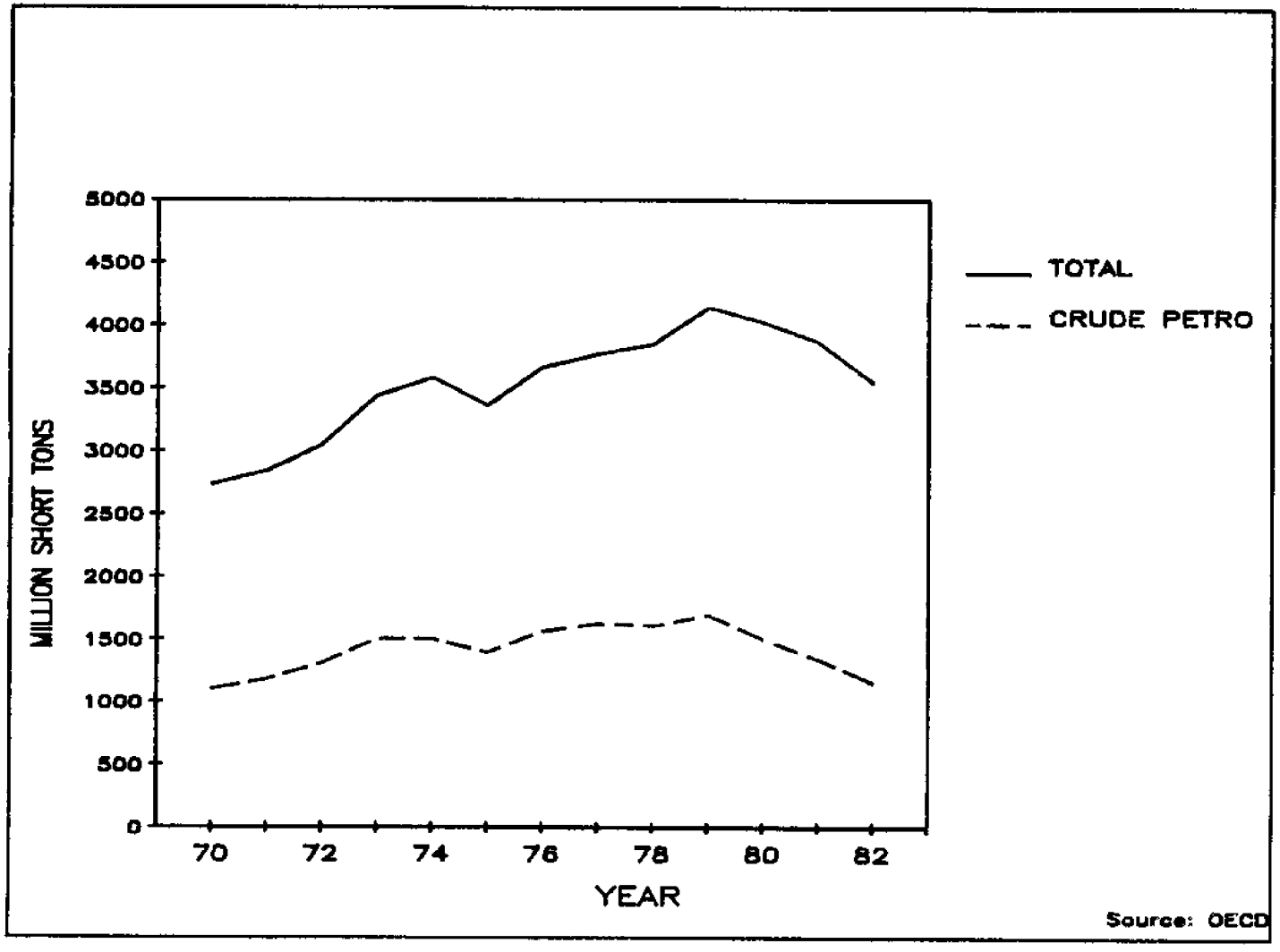


Figure 7. World seaborne trade total and crude petroleum 1970-1982.

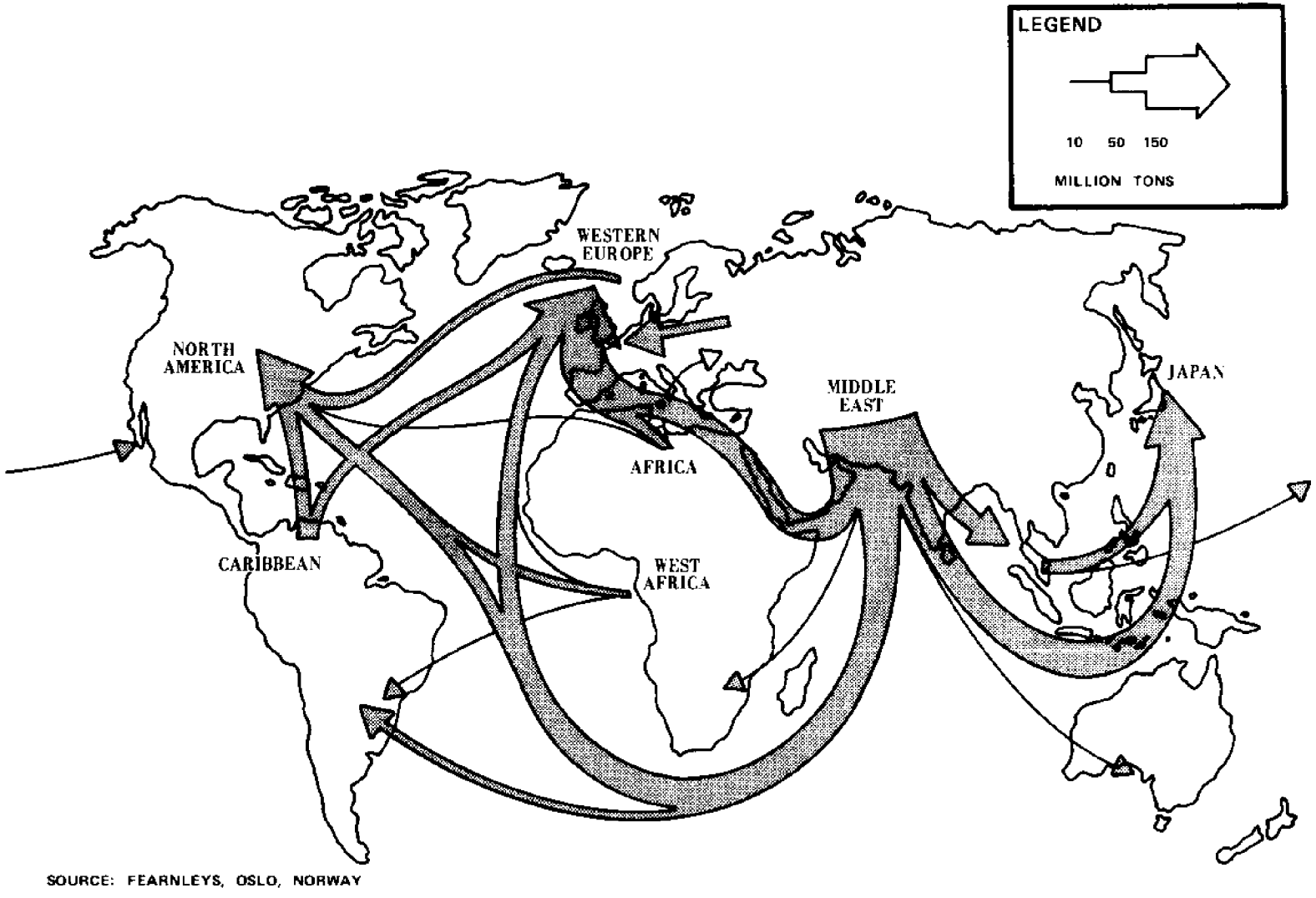


Figure 8. Crude oil-seaborne trade 1982.

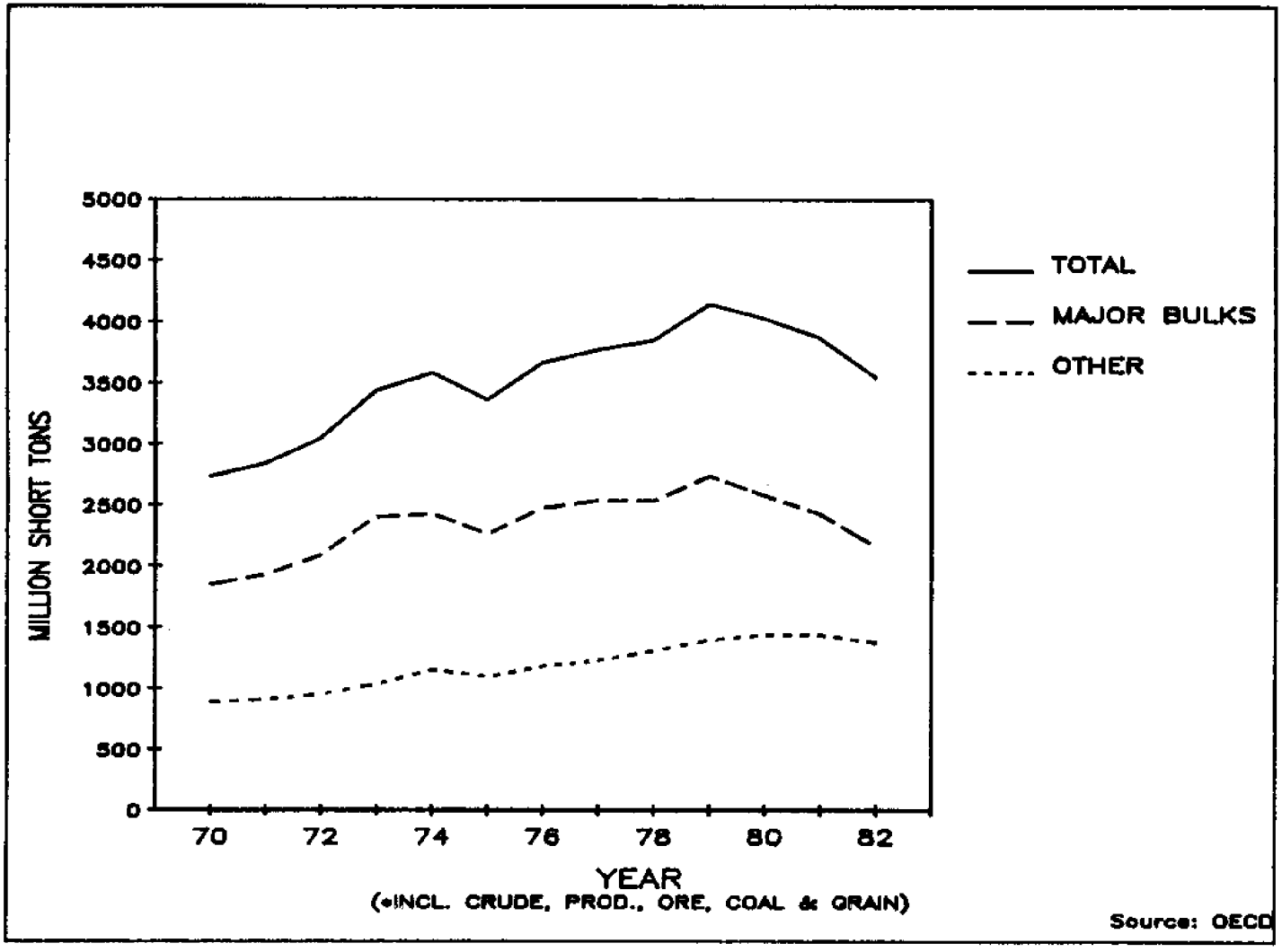


Figure 9. World seaborne trade total and major bulks* 1970-1982.

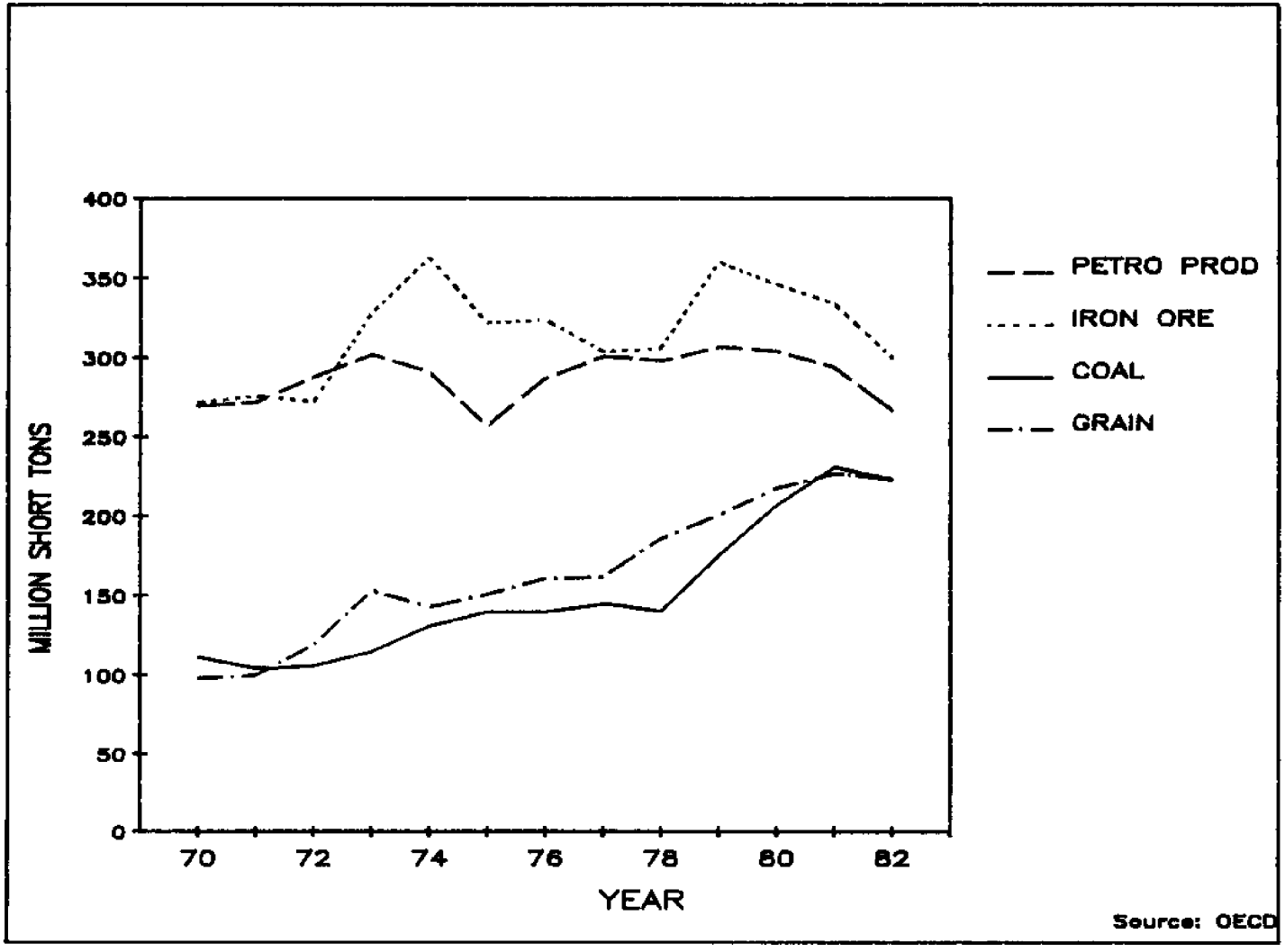


Figure 10. World seaborne trade petroleum products, ore, coal and grain 1970-1982.

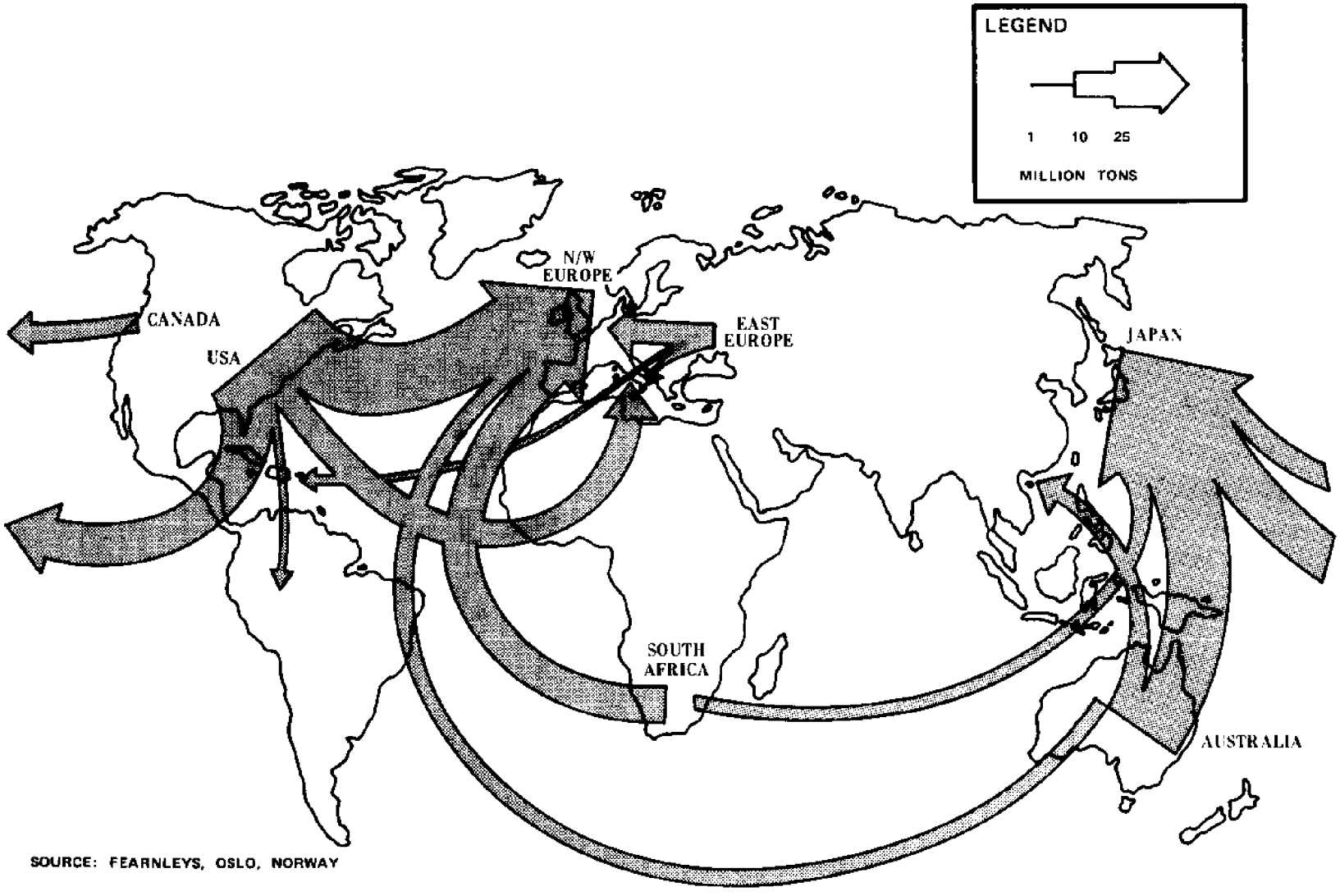


Figure 11. Coal-seaborne trade 1982.

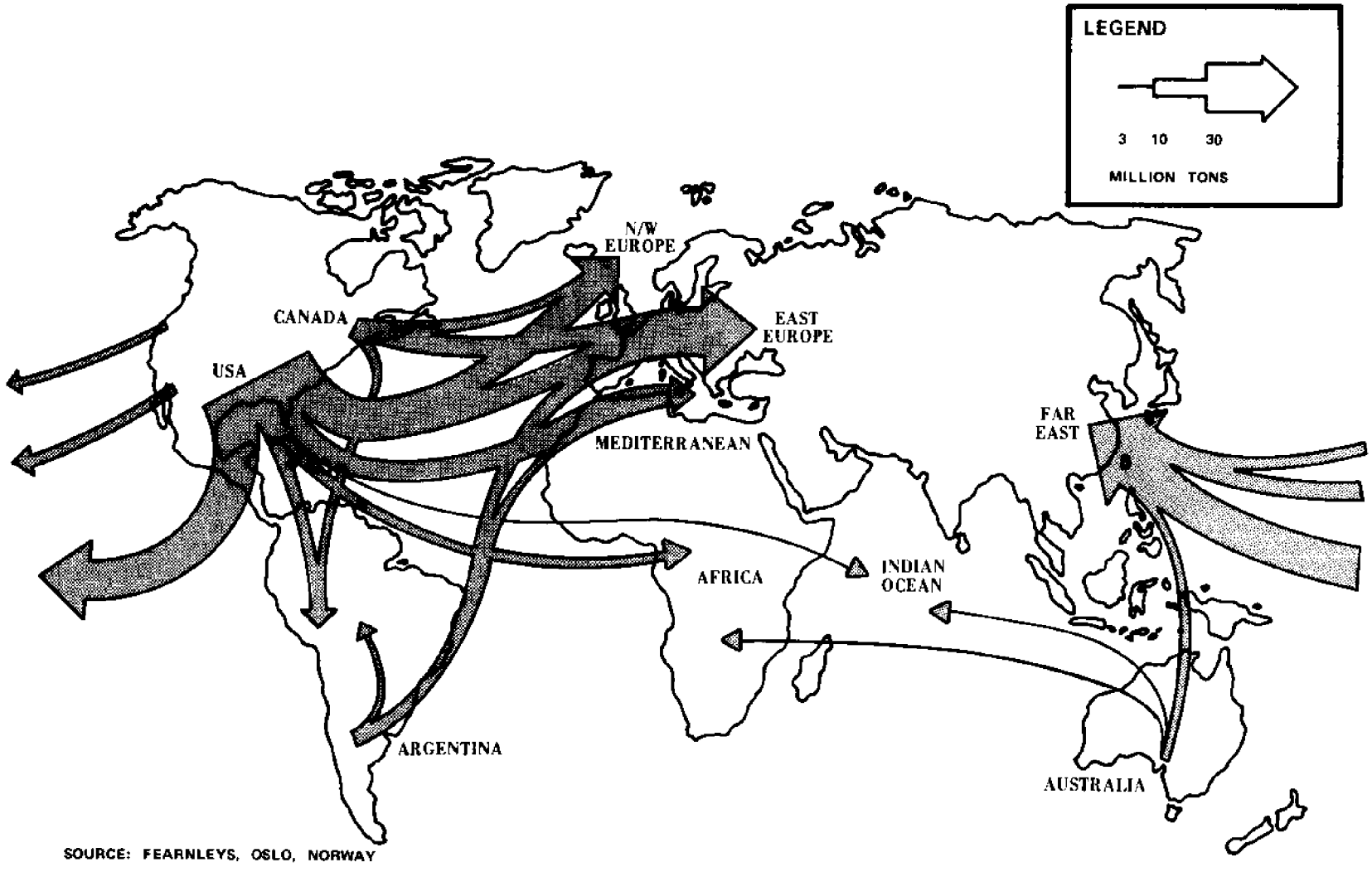


Figure 12. Grain-seaborne trade 1982.

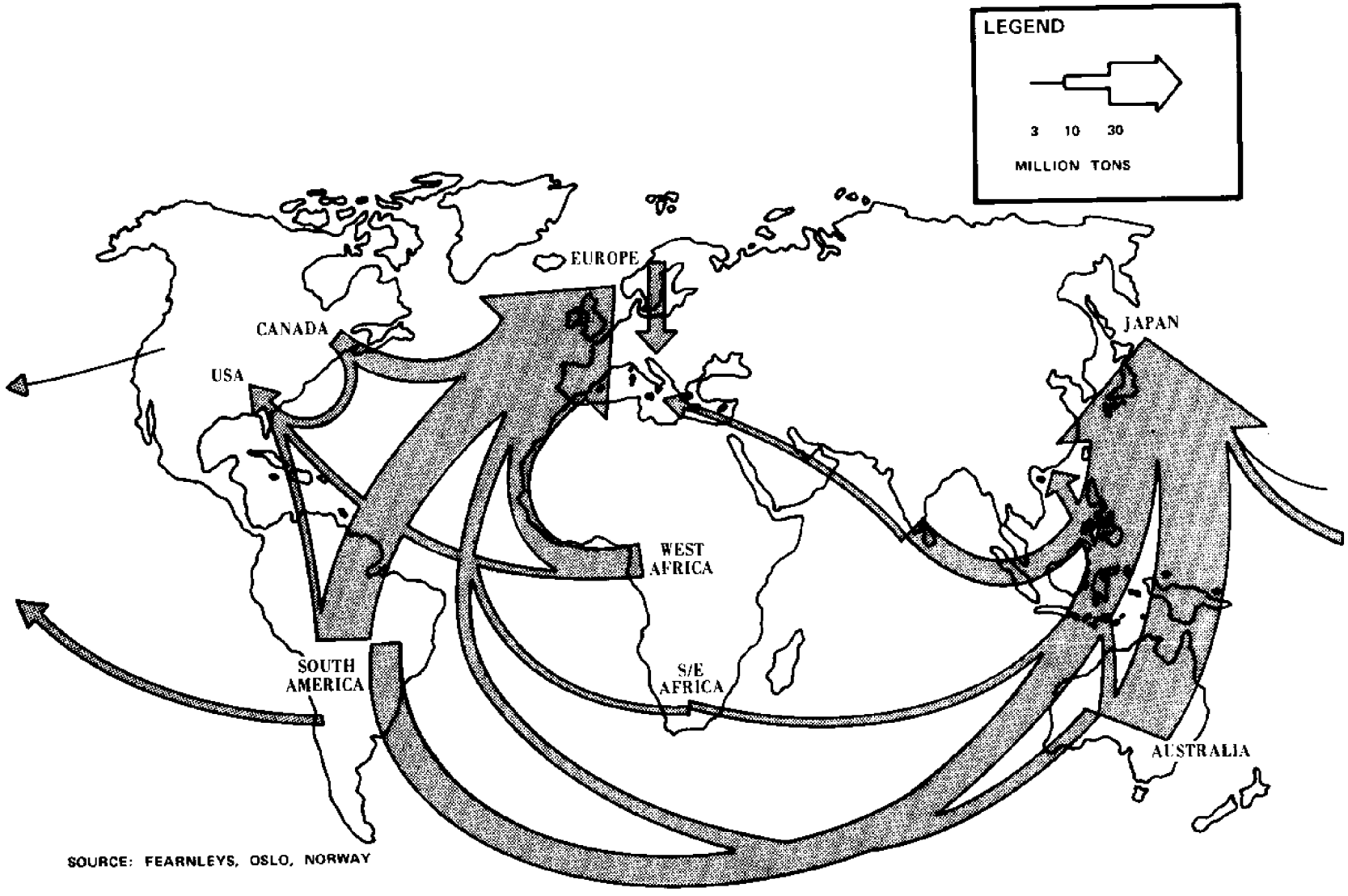


Figure 13. Iron ore-seaborne trade 1982.

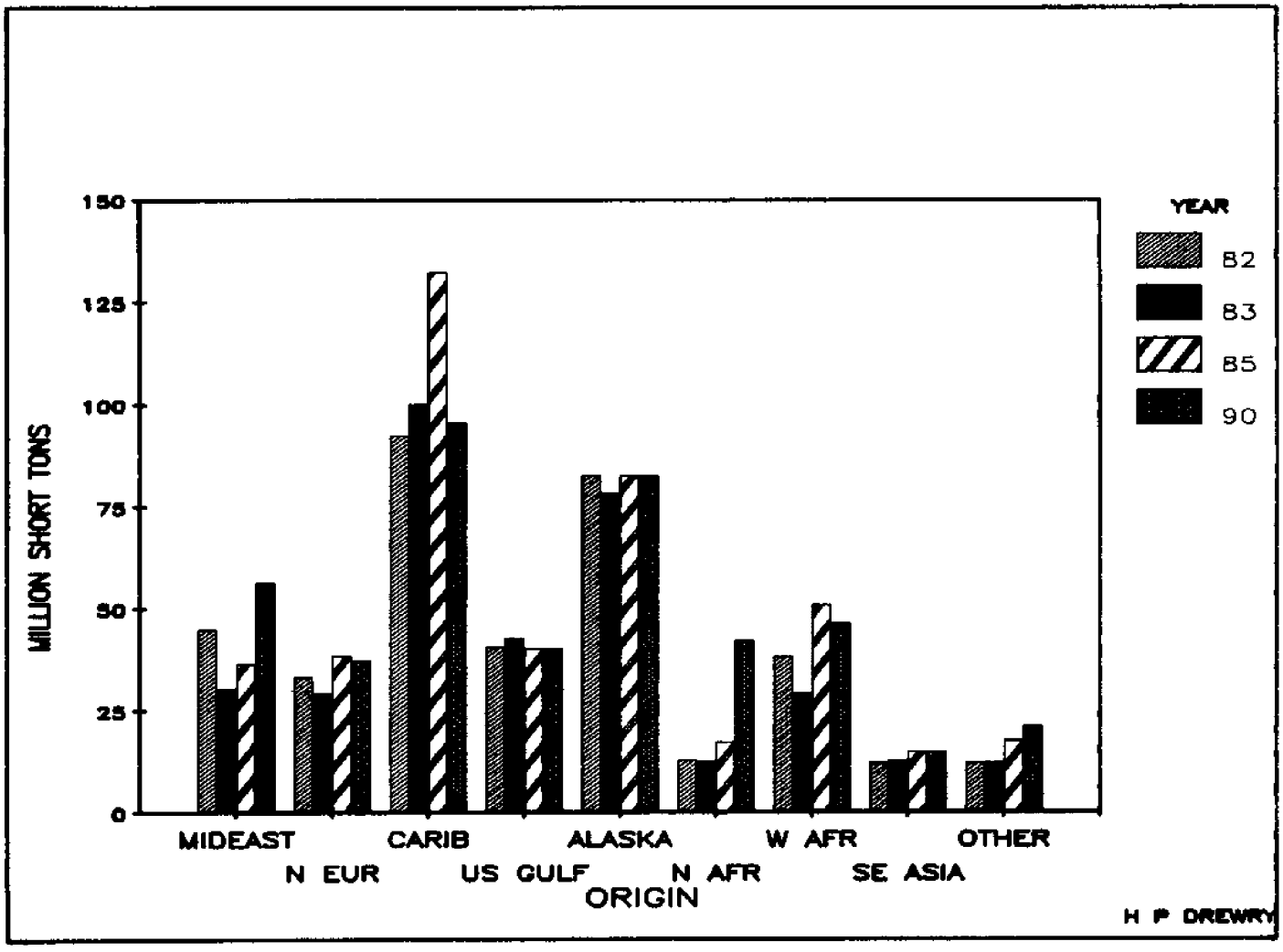


Figure 14. Crude and products movements to U.S. by sea: 1982, 1983, 1985, 1990.

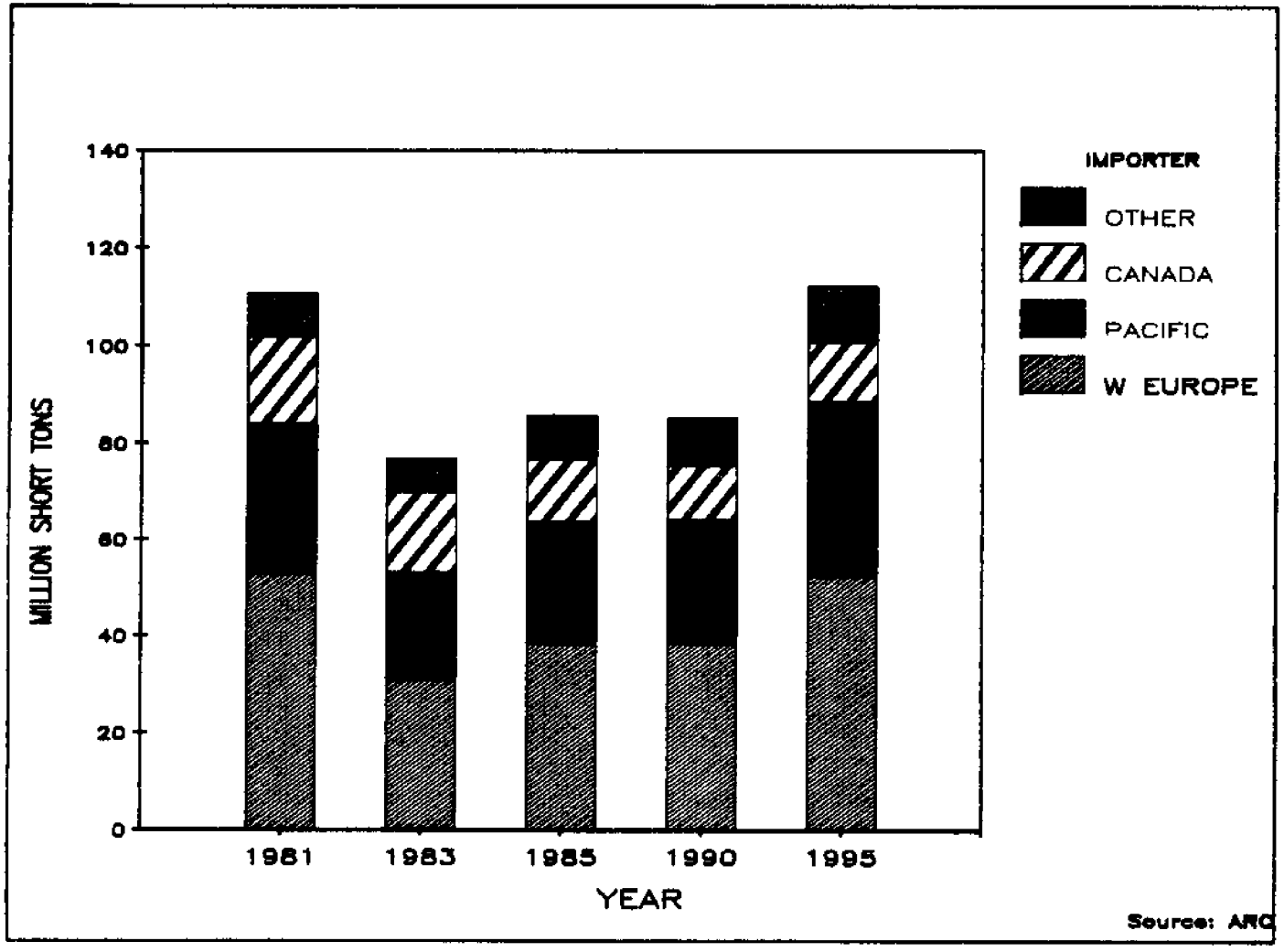


Figure 15. Recent and projected U.S. coal exports.

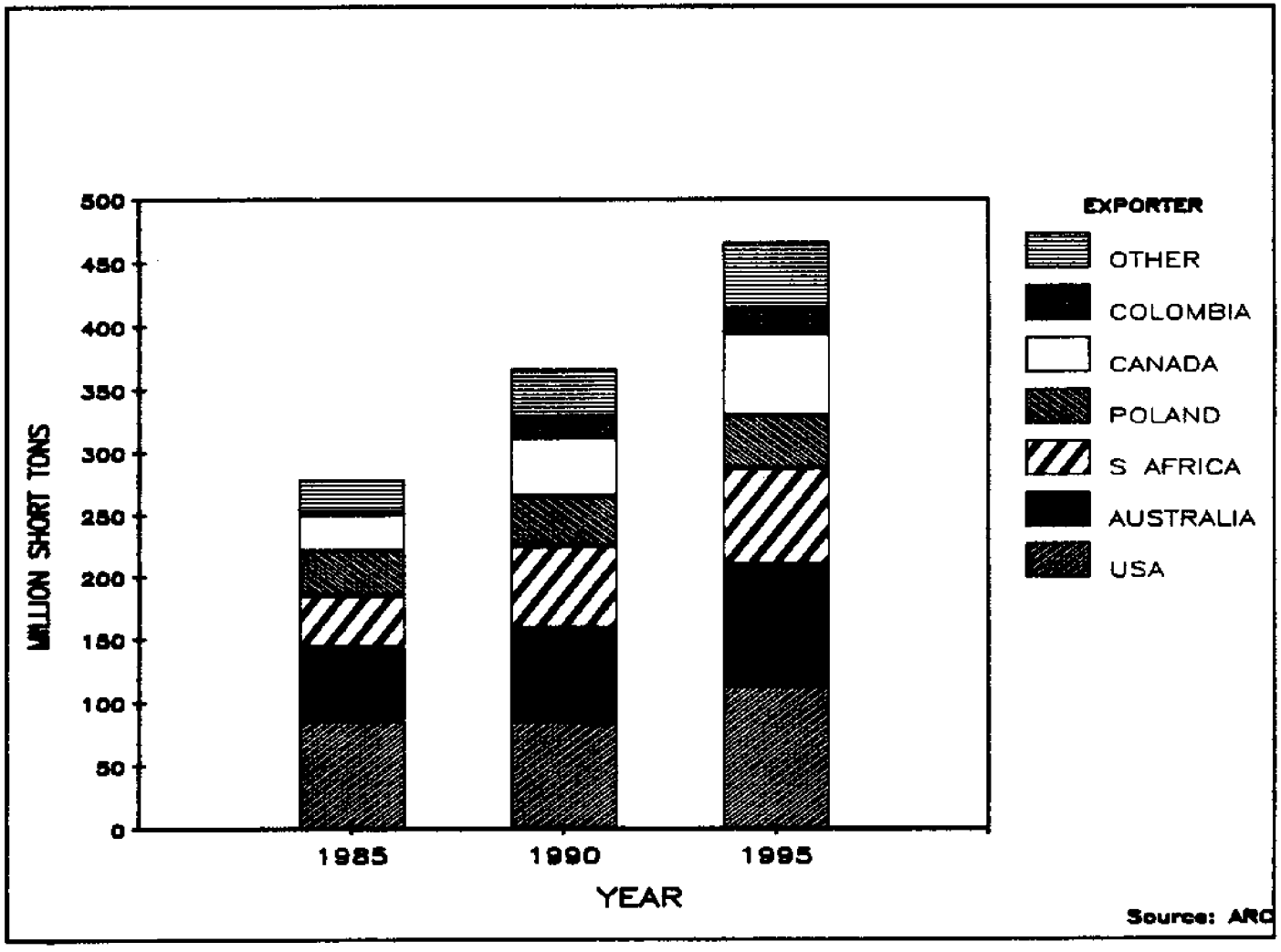
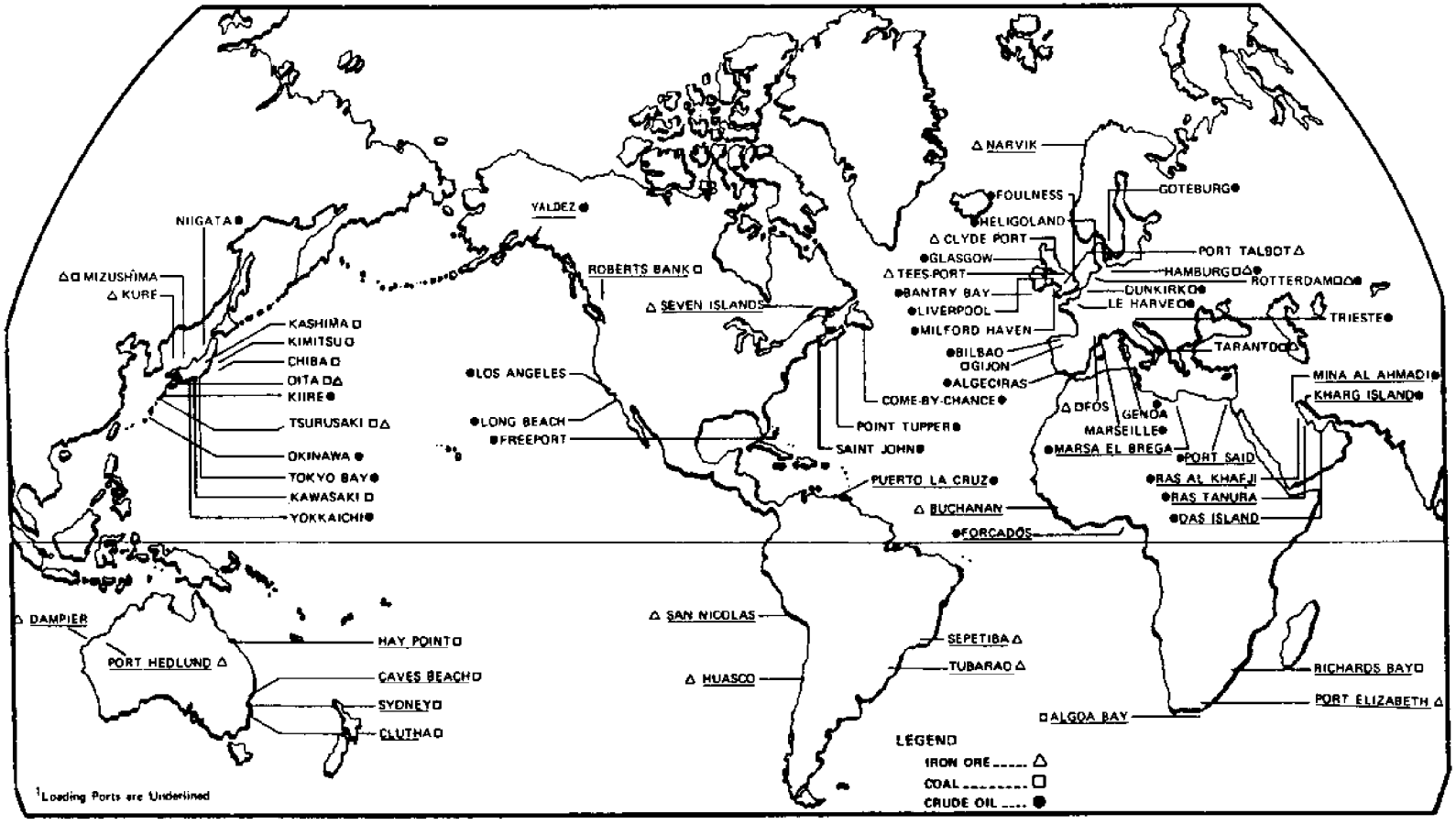


Figure 16. World coal trade forecasts by exporting nation 1985, 1990 and 1995.



Source: Maritime Administration, U.S. Dept. of Commerce, The Economics of Deepwater Terminals, p. 11, 1972.

Figure 17. Representative world ports capable of accommodating 150,000 DWT vessels[1].

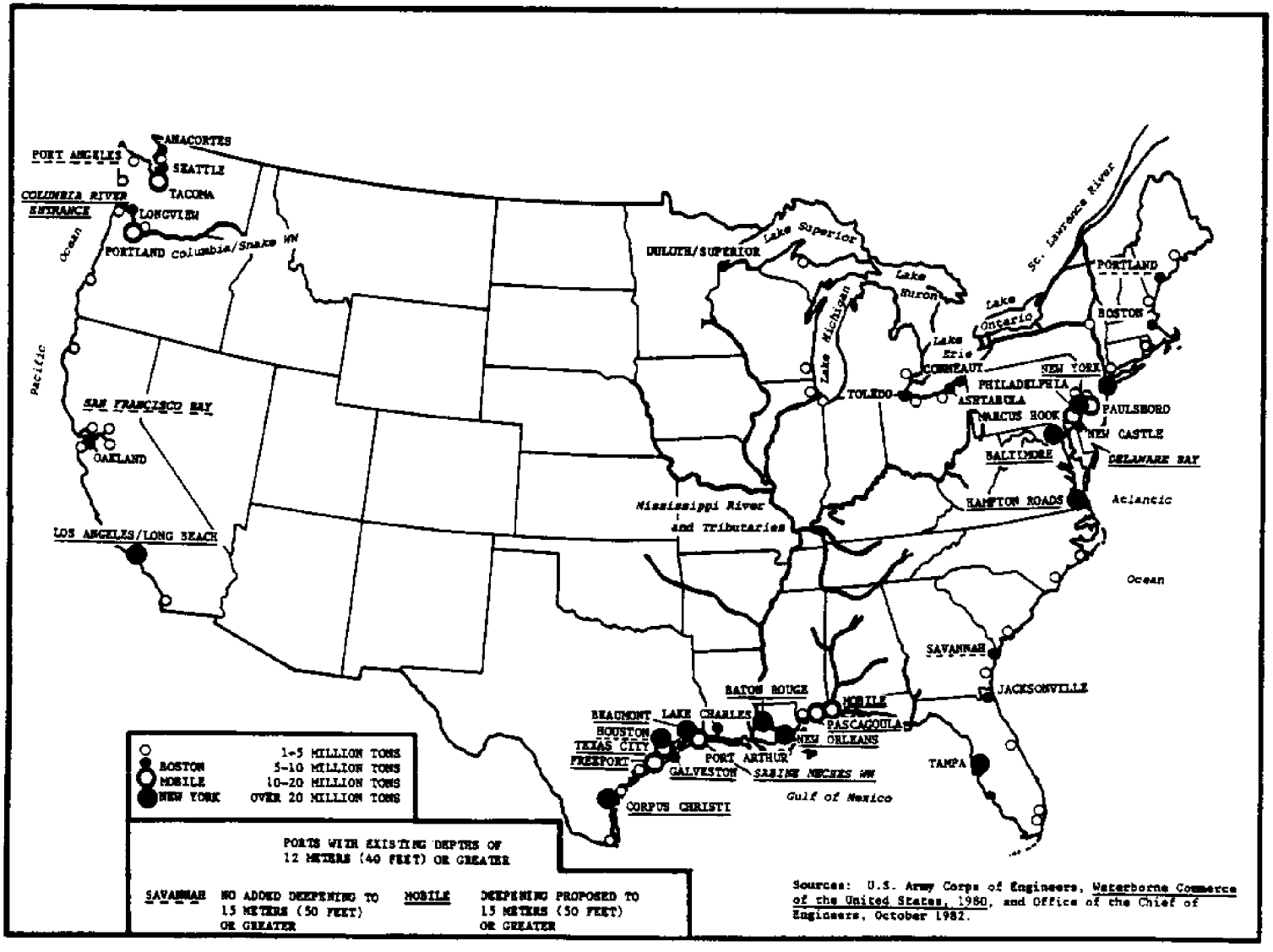


Figure 18. U.S. coastal and Great Lakes ports with over 1 million tons of foreign commerce in 1980.

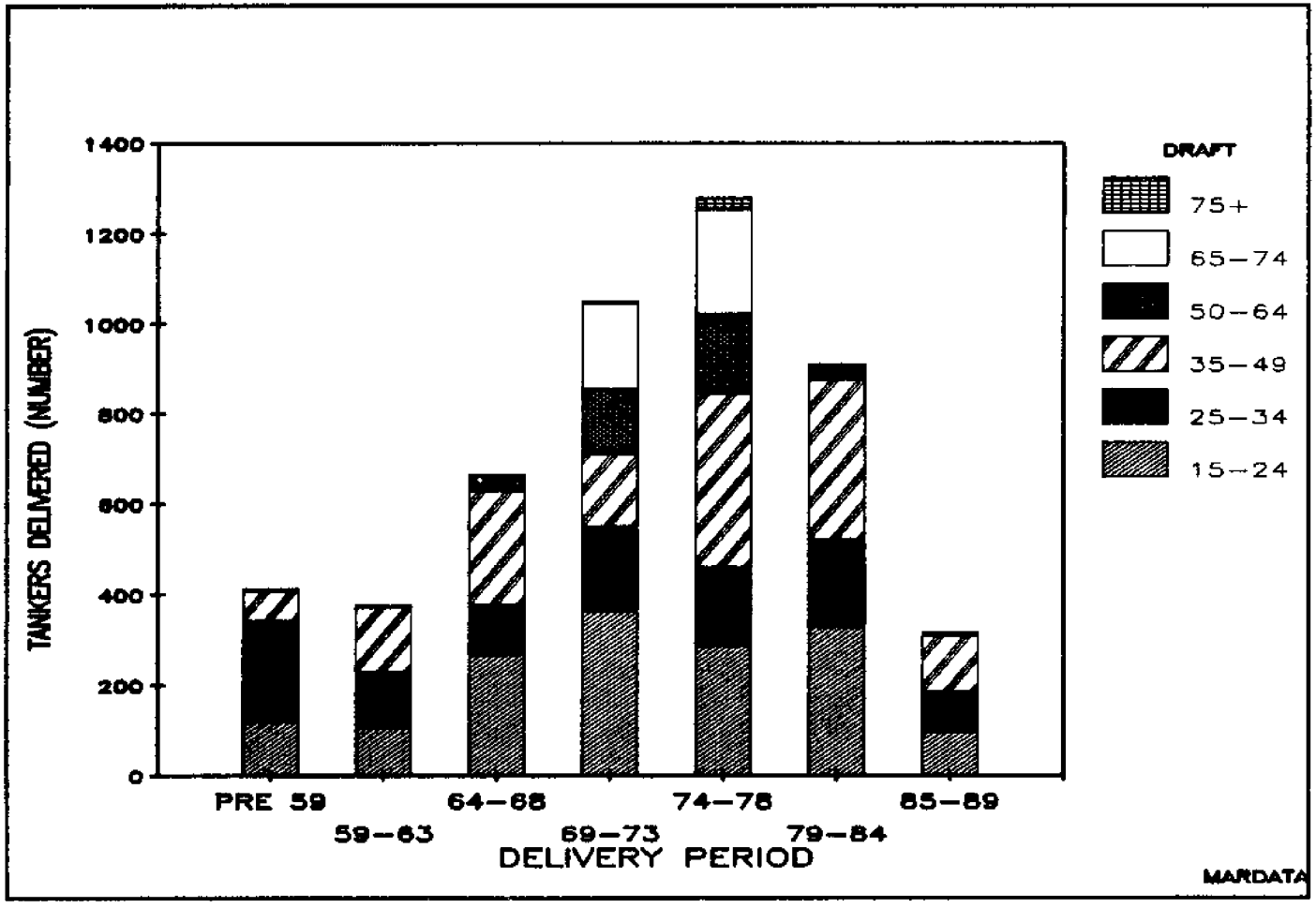


Figure 19. Total tankers delivered and on order.

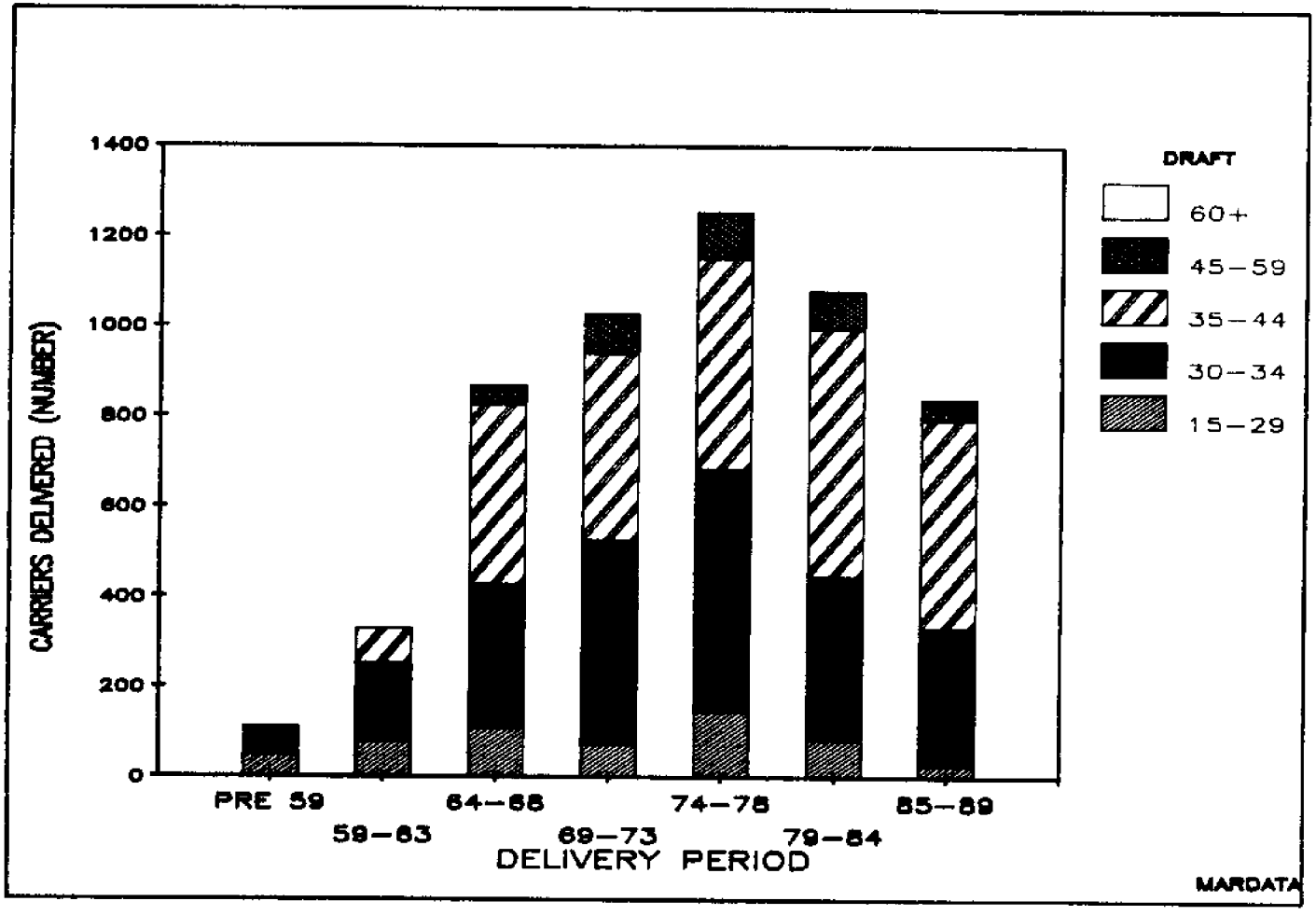


Figure 20. Total dry bulk carriers delivered and on order.

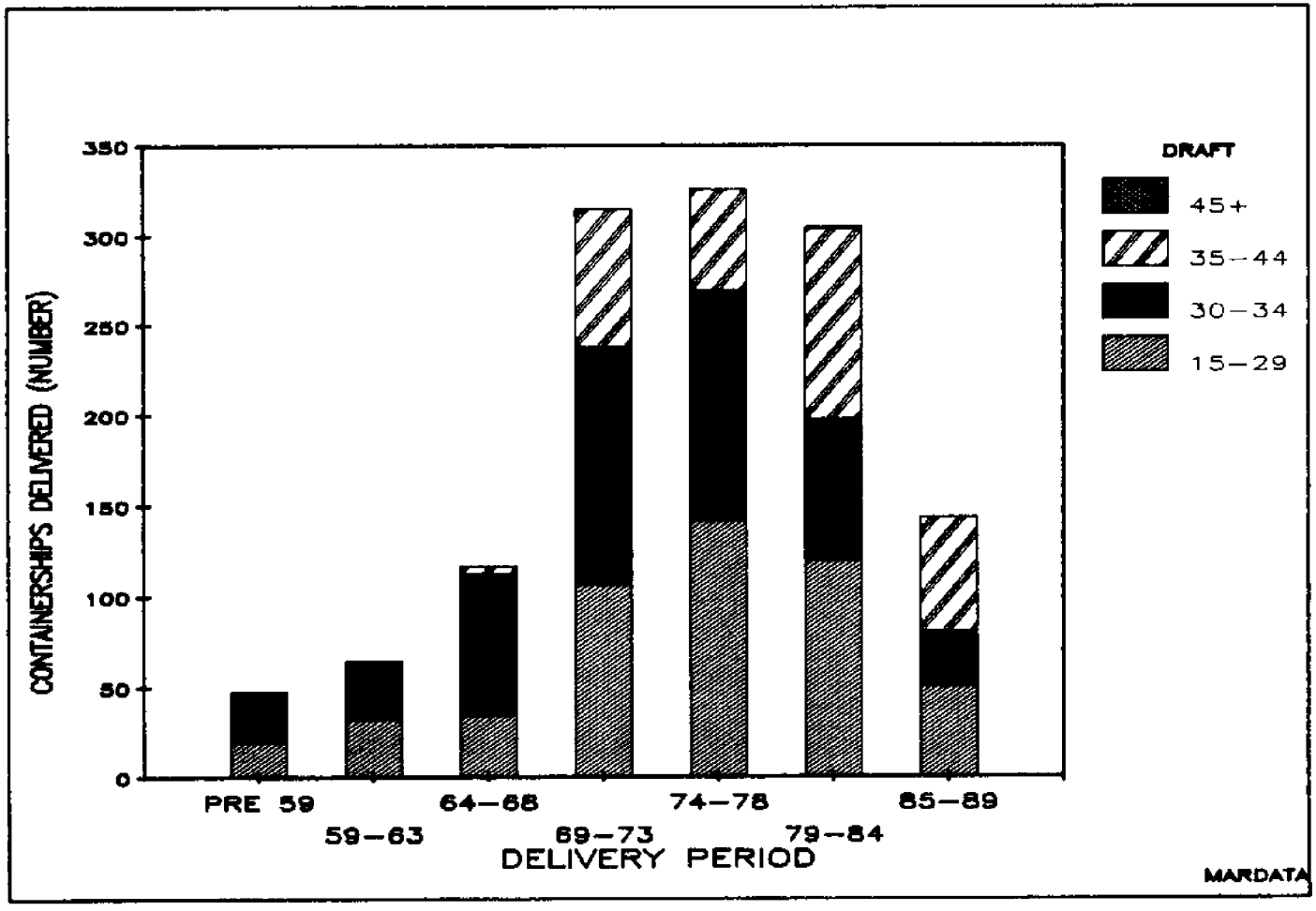


Figure 21. Total containerships delivered and on order.

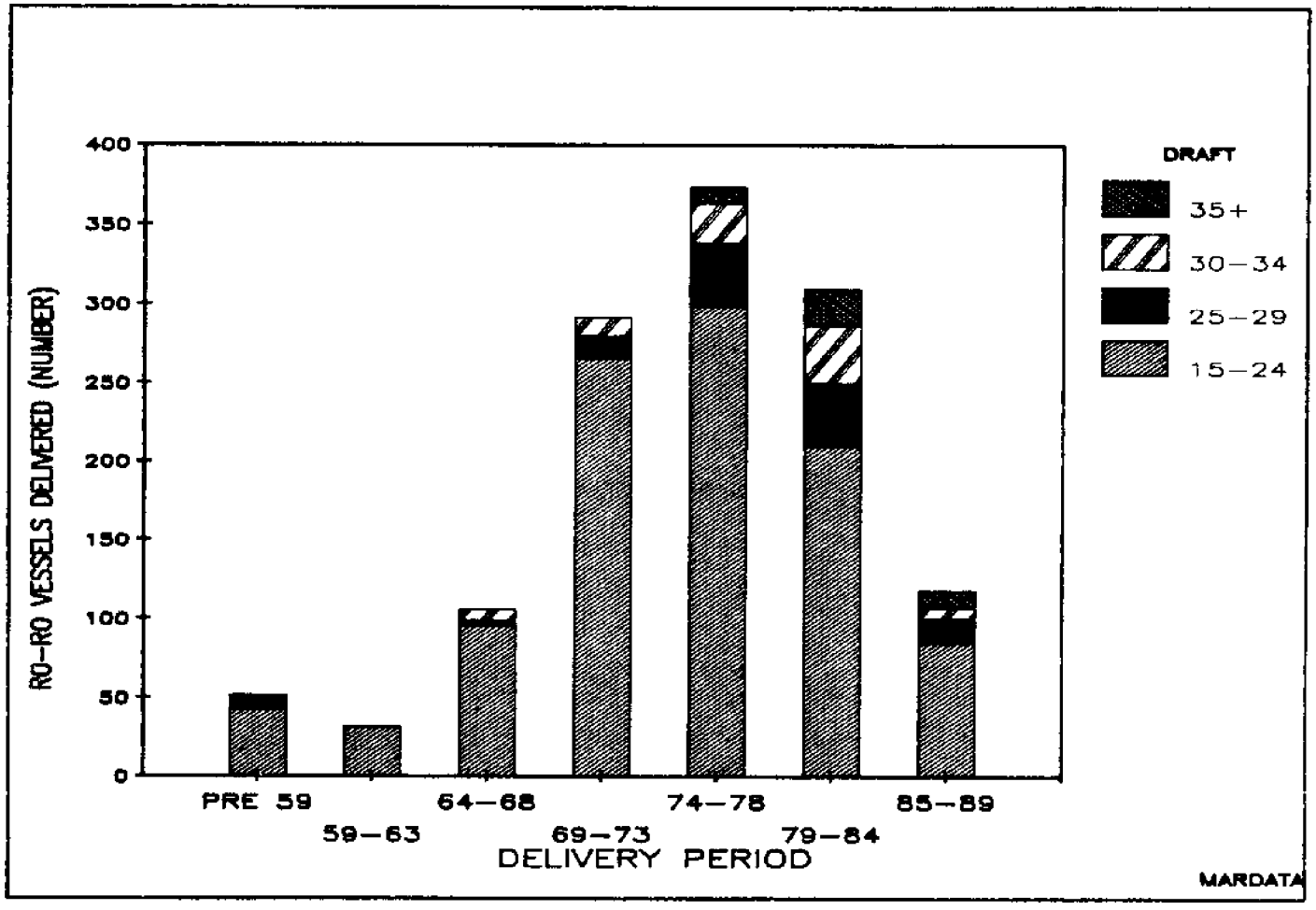


Figure 22. Total RO-RO vessels delivered and on order.

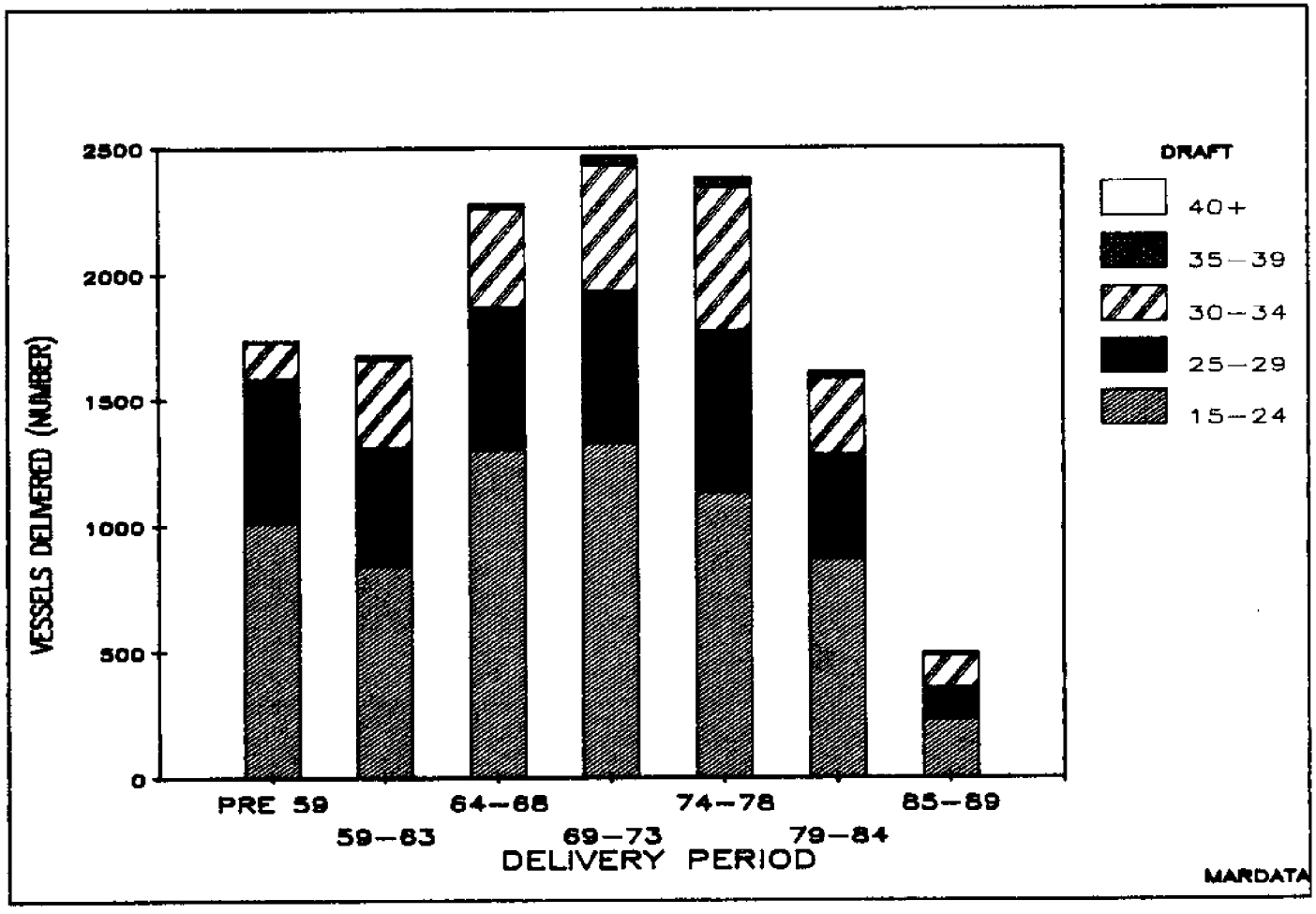


Figure 23. Total general cargo vessels delivered and on order.

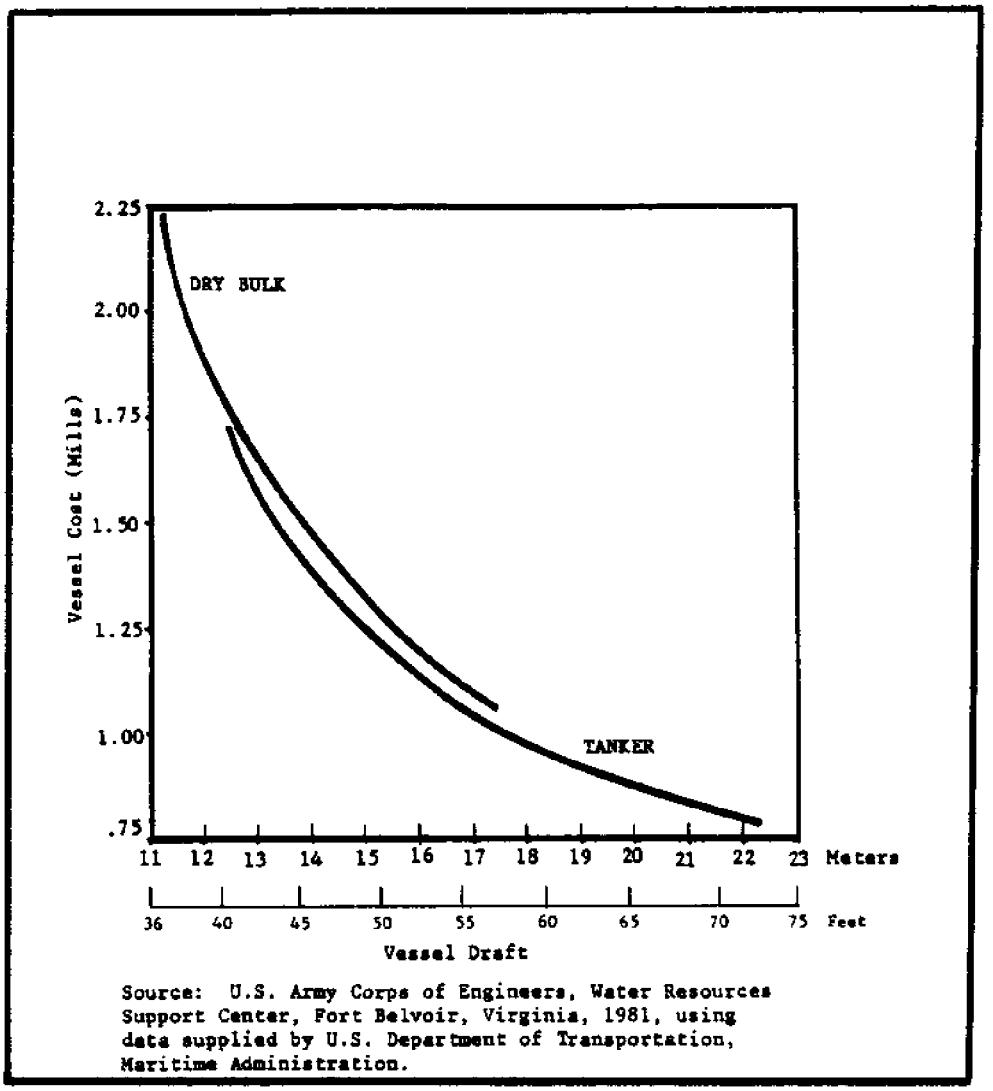


Figure 24. Foreign flag vessel operating costs per metric-ton nautical-mile (mills).

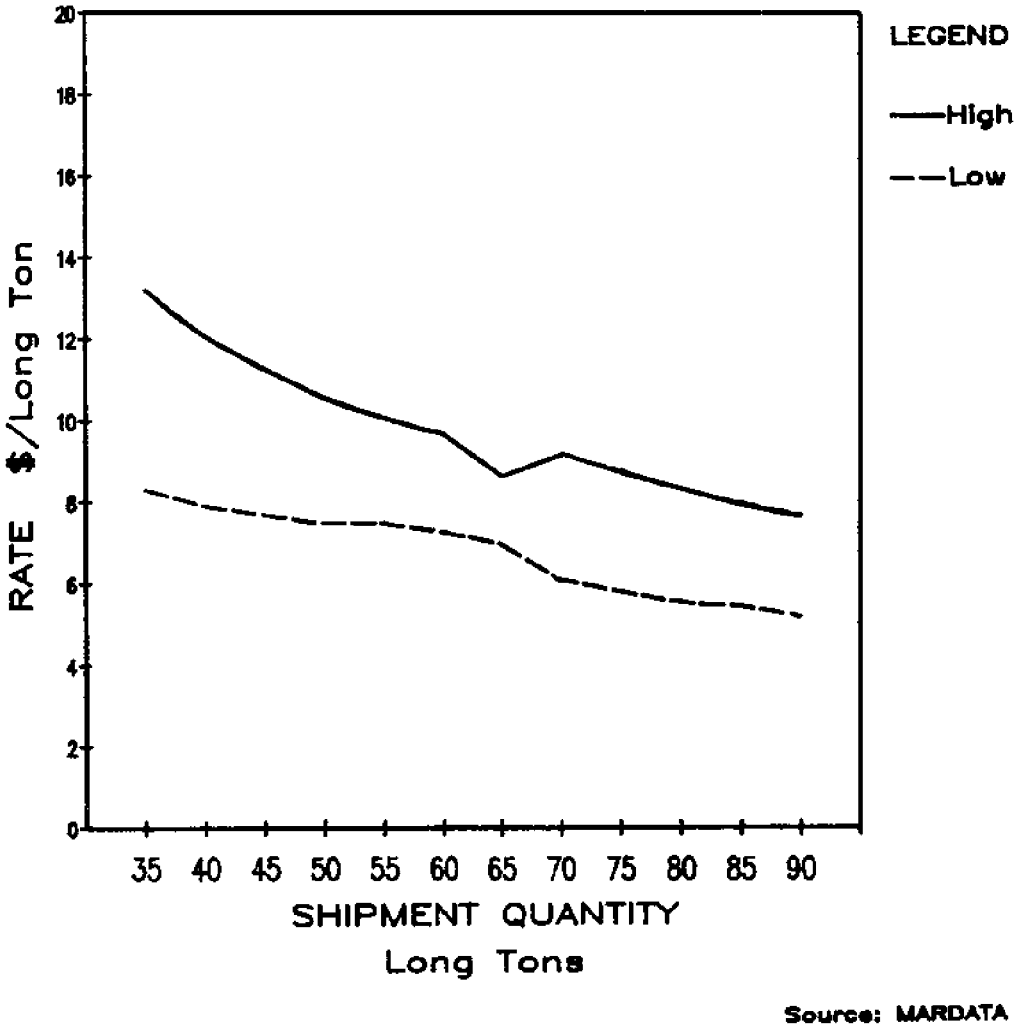
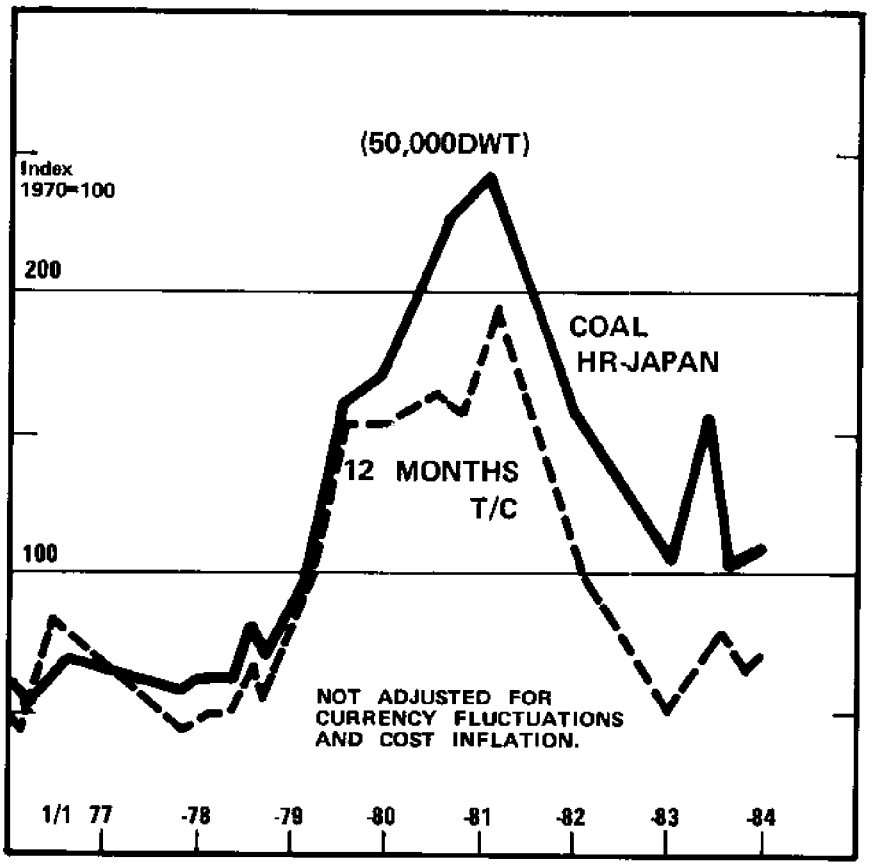
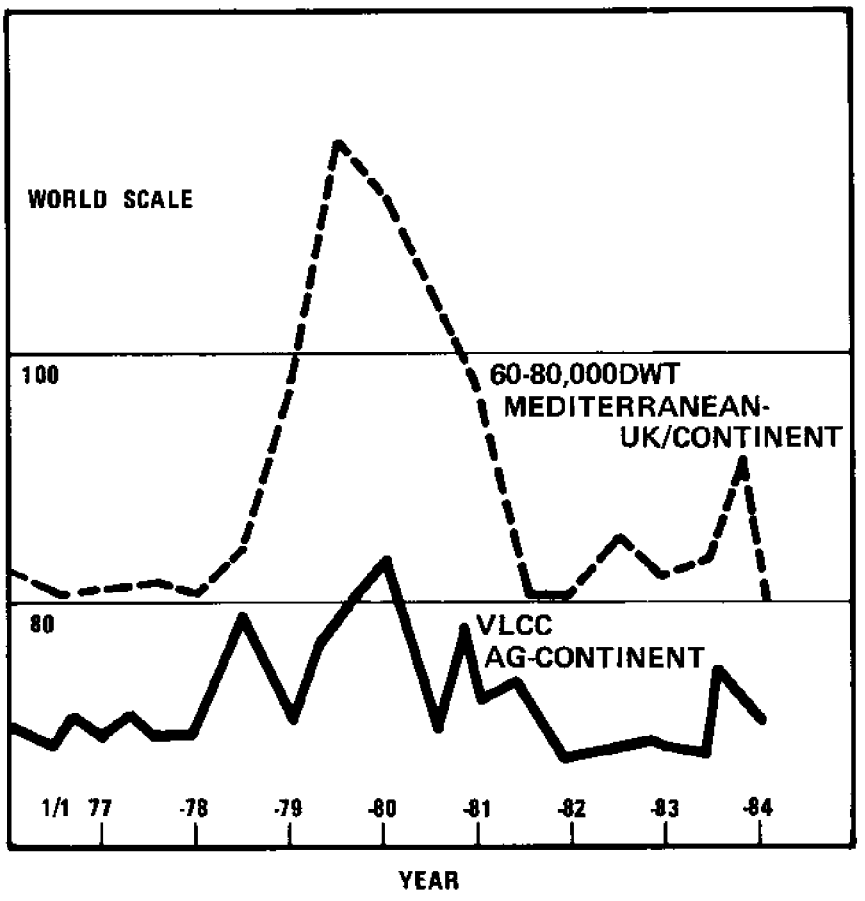


Figure 25. Charter fixture rates coal shipments Norfolk to continental Europe January - June 1982.



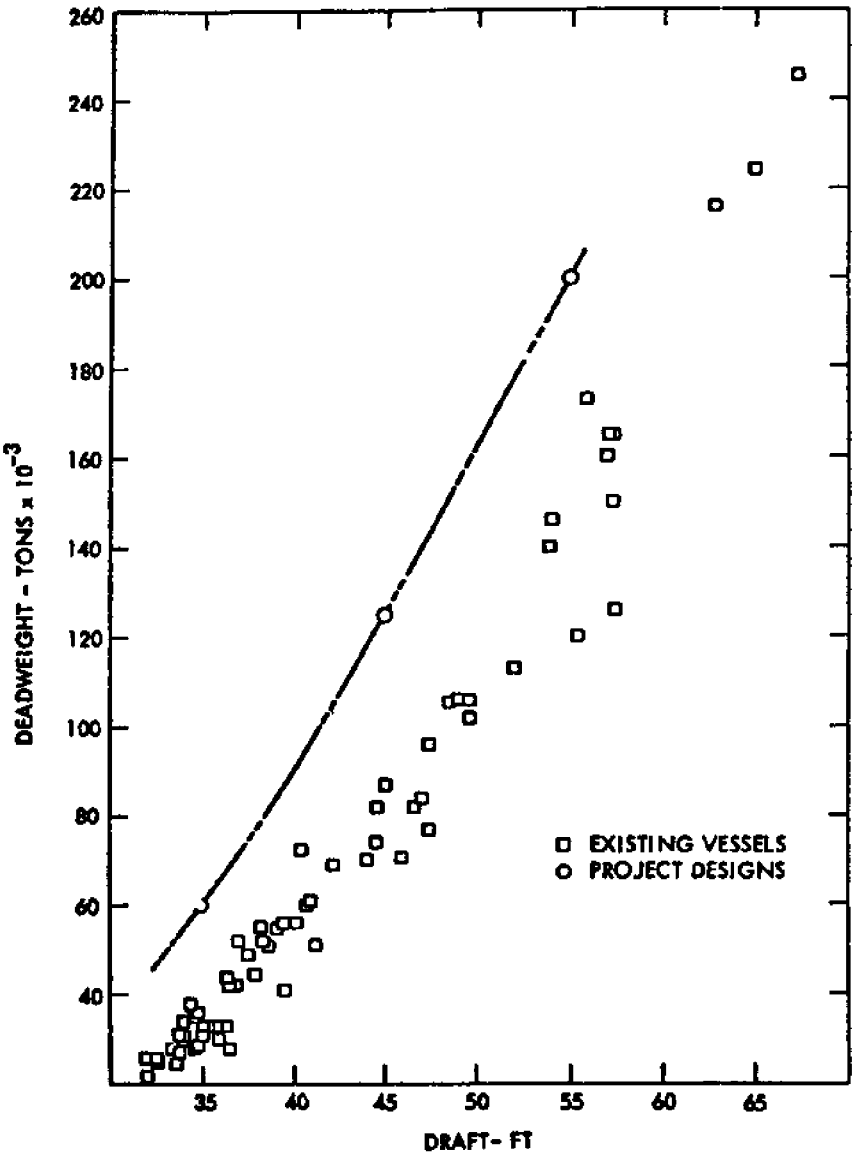
SOURCE: FEARNLEY'S, REVIEW 1983, OSLO, NORWAY.

Figure 26. Dry cargo freight market.



SOURCE: FEARNLEY'S, REVIEW 1983, OSLO, NORWAY.

Figure 27. Tanker freight market.



Source: Institute for Water Resources, Social Scientists Conference: Proceedings, Vol. III, December 1977.

Figure 28. Deadweight vs. draft for dry-bulk, obo and ore-oil carriers.

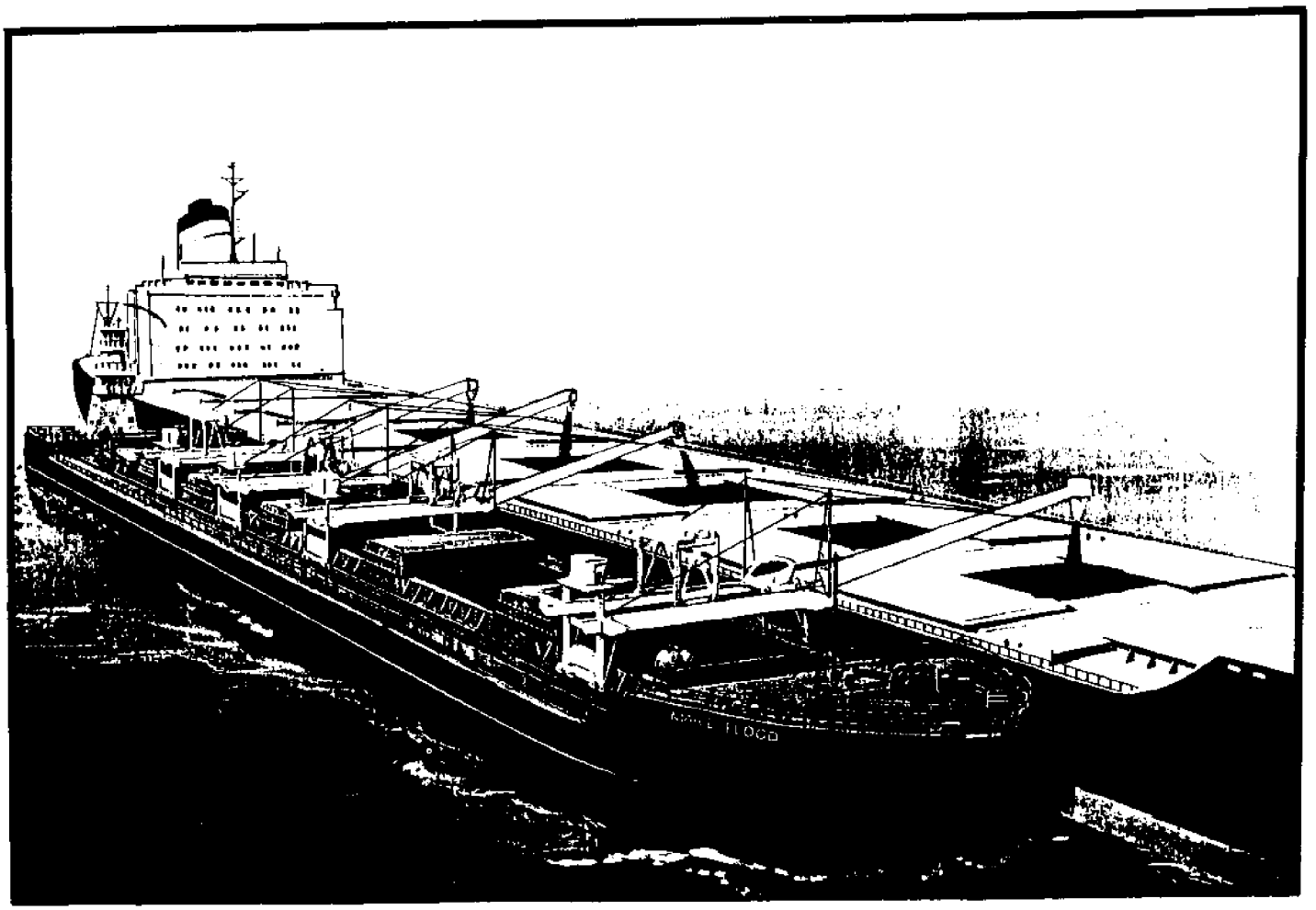
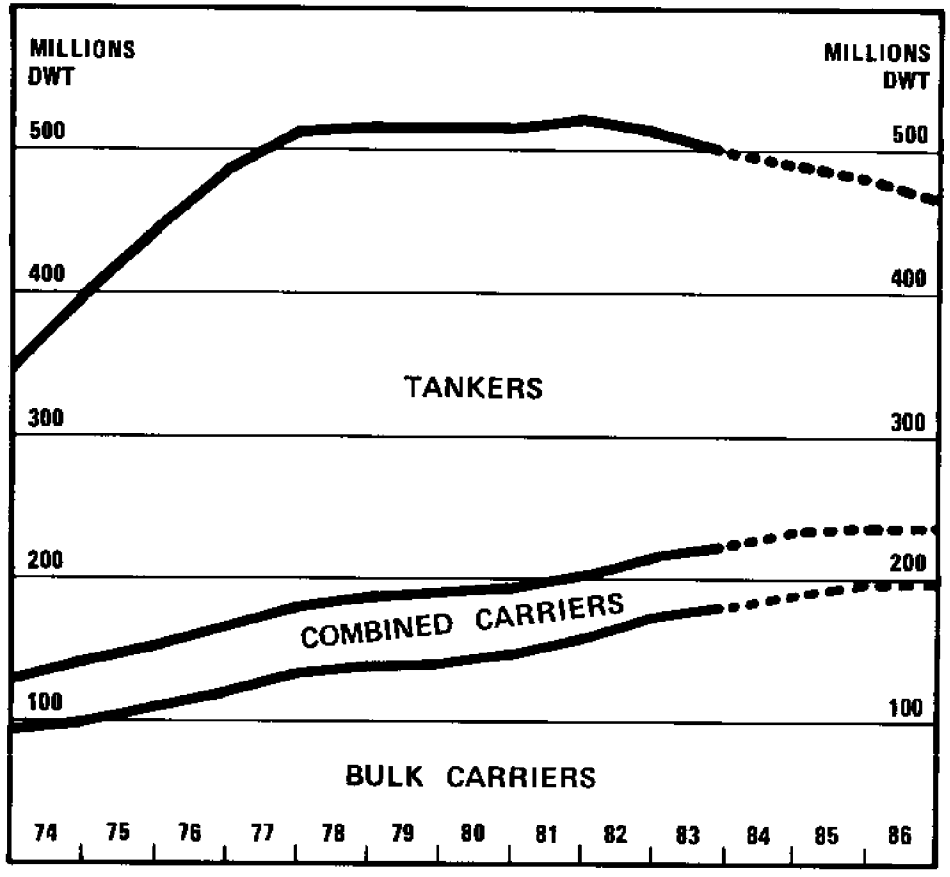


Figure 29. Electro-coal topping-off vessel.



SOURCE: FEARNLEY'S WORLD BULK FLEET, 1983, OSLO, NORWAY

Figure 30. World bulk fleet.

Servicing Rural Areas

RURAL TRANSPORTATION SERVICES IN A DEREGULATED ENVIRONMENT - WHAT IS TO BE DONE?

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Simat, Helliesen and Eichner, Inc.
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INTRODUCTION

No two ways about it, Alaska is a state of enormous prosperity. Since 1978, Alaska has spent over $14.9 billion to improve life and achieve a higher standard of living. This legacy of wealth has financed the housing loan program and a host of public works--pioneer homes, bridges, convention centers, hydroelectric projects, port facilities and boat harbors.

In most cases, the benefits of these projects will never come close to offsetting total project costs. In fact, debt service on bonds to finance some of the projects will be a significant continuing burden. But where the state has paid cash, as it has for many of these projects, Alaskans will enjoy reduced living costs at least for the near future, especially in the areas of housing and energy costs.

It is Alaska's commitment to improved life that is so absolutely extraordinary! No state, not even oil wealthy Texas, has adopted such a protective, avuncular role toward its citizenry.

The state's policy to spend oil revenues now for public works has created a rare opportunity to clearly choose what is to be done to maintain and improve Alaska's transportation system. Already there is an ample list of accomplishments. However, with the prospect of continued but perhaps more limited public benevolence, it is useful to candidly review steps taken by the state of Alaska to improve transportation services and facilities.

It is my view that several key federal actions are now shaping the transportation situation up here, perhaps to the detriment of rural Alaska. Unless the state takes a more active and directed approach to rural transportation services, these services will both decline and become inordinately expensive.

THE UNDOING OF FEDERAL AUTHORITY

In the last few years, the federal government has set in motion a wide-ranging program of defederalization which impacts Alaska now and is guaranteed to affect the state in the years to come. By defederalization, I mean that the federal government has given up major regulatory powers over the transportation and utility industries. It has also ended or scheduled termination of many programs which subsidize basic services to the smaller communities in the country.

Defederalization is having strong repercussions within Alaska. For example, the Bureau of Indian Affairs has discontinued its North Star shipping operation, thereby halting important transportation service to Western Alaska. This last year, the U.S. government sold the Alaska Railroad to the state for approximately $23 million. And finally, in an action with far-reaching implications for state of Alaska transportation priorities, the National Marine Fisheries Service is now staging a scheduled withdrawal from St. Paul and St. George in the Pribilof Islands.

It is no accident that the state of Alaska has responded to these federal actions and has sought to turn them into opportunities. The acquisition of the railroad by Alaska came after many months of careful negotiations and clearly now the state has made a major commitment to the maintenance and possible extension of rail service. Nor does it come as any surprise that the state is now constructing two of perhaps the most costly breakwater and dock facilities in Alaska to provide an economic boost to St. Paul and St. George.

Federal actions are heavily influencing local and state spending and priorities. However, probably even more profound in its long-term impact on rural Alaska is airline deregulation and the phasing out of the Essential Air Service Program.

Until 1982, the federal government, under Section 406 of the Federal Aviation Act, subsidized Alaska Airlines, Wien Air Alaska, Reeve and Kodiak Western to the tune of about $10 million per year. These carriers or their subcontractors, in order to obtain the subsidy, guaranteed a certain level of air service to 183 points in Alaska.

The Airline Deregulation Act phased out the 406 program and replaced it with the Essential Air Service Program. In theory, even a greater number of communities are eligible for subsidy under the EAS program, but in fact, subsidy levels and service have declined precipitously in the last couple of years. Only 26 Alaska communities are now served under the Essential Air Service program and subsidy has declined from $10 million to $4.4 million. The lion's share of this money--$3.6 million--goes to Alaska Airlines for service to Yakutat, Petersburg, Wrangell, Cordova and Gustavus. This subsidy will expire in January, 1987, and without renewal these communities may lose jet service. Unless Congress intervenes, the entire EAS program is scheduled to sunset in October, 1988, leaving all air service in Alaska to be governed by the marketplace.

Now that might not be all that bad. However, if history is a good predictor, we can probably expect to see a reduction of air service to rural Alaska and, most certainly, higher passenger fares.

Probably even more important to rural Alaska than the Essential Air Service Program are the effects of Airline Deregulation on the U.S. Postal Service.

The U.S. Mail offers the cheapest way to ship standard-size packages to many parts of Alaska. For the smaller air carriers in Alaska, carrying mail accounts for up to 50 percent of gross revenues (as compared to 2 percent in the rest of the country). While not a direct subsidy, mail contracts have justified air service to many bush communities where there were not enough passengers to make scheduled service economic.

Before airline deregulation, mail contracts and subsidized air service went hand-in-hand. The U.S. Postal Service delegated the selection of mail carriers and the setting of postal rates to the CAB (Civil Aeronautics Board). The CAB in turn would then give the postal contracts to certified carriers who would also agree to serve the small communities. The mail contracts were the key revenue ingredient to operations.

Airline deregulation decoupled mail contracts and subsidy. The authority to award mail contracts and set postal rates went to the U.S. Postal Service (USPS). The USPS has kept virtually the same rate structure for mail contracts covering Alaska. But the Postal Service has adopted a new

policy to tender mail among all willing carriers on the basis of capacity.

For the air carriers in Alaska who depended on mail for substantial revenues, the pie has been dangerously divided. To operate economically, these carriers must now scramble for more passengers, raise fares or cut back service. This has already happened in the Fairbanks area and I think it is likely we will see intense competition among bush carriers, bankruptcies, and buyouts. But most certainly we will see higher air fares to rural Alaska.

The trend is affirmed all over the country. In the big markets, fares have gone down; in the small communities, service is worse and fares are higher.

So why talk about air service at Maritime Alaska? The reason is that transportation to rural ALaska is a multimodal problem. The time is now to begin thinking about how much and what kind of basic transportation services and facilities are needed to support Alaska's communities.

I don't think we can afford the luxury of thinking in terms of separate modes. Transportation to rural Alaska will have to be supported on many fronts at once. Setting priorities is going to become even more important in the next 15 years if oil revenues continue to decline at their present rate of 10 percent per year.

PAST PERFORMANCE ON STATE TRANSPORTATION PRIORITIES

Setting priorities and good project selection has been on the collective minds of almost every state agency for the last ten years. In 1981, the state of Alaska began a soul-searching effort to define a role for state government in the development, management and operations of ports.

The first Maritime Alaska Conference was part of that effort, as were a number of user group workshops. A key outcome of that work was endorsement by the state commissioners of new policies for port development and marine commerce. The policies implied a whole new way of doing business. They:

- Directed the Department of Transportation and Public Facilities to set priorities for port development and

recommended that priorities be tied to a functional classification system.

- Affirmed the state's commitment to support a minimum level of transportation service and facilities to assure access and a means of delivering goods.

- Recognized the importance of regional coordination to the development of a well-managed statewide system of ports.

- Emphasized local control and management of ports.

- Favored private sector investment in ports, but authorized state financial participation for projects consistent with established priorities.

Since enlightened intentions come and go, it is instructive to take a look at state appropriation for port and harbor projects for the last four years. In that way, we can see what legislative imperatives have prevailed in the port development area. From the Session Laws of Alaska, appropriations for all port and harbor projects were identified and grouped by community. Communities were then ranked according to the aggregate amount of appropriations received in the four-year period. (Tables 1 and 2) The results of the analysis are indeed interesting.

During the last four years, the Legislature has appropriated almost $129 million. This money has gone to more than 80 communities for port developments. Funding supported feasibility studies, pre-construction design and engineering, breakwater and dock facilities, boat harbors and port-related economic development like the Seward Marine Industrial Park and the Valdez Commercial Boat Harbor. There are a few political scams embedded in the appropriations, such as the not-to-be forgotten $3 million for Latouche Harbor, but overall the state's commitment to an improved port infrastructure is clear.

Appropriations for port facilities are also on the increase, in spite of a somewhat diminished capital budget. (Figure 1) In 1982, the Legislature appropriated $13 million for port projects, but in the most recent two sessions, appropriations each year exceeded $50 million. This is a hefty sum, although it represents only about 3 percent of the state's total capital budget.

A closer look at appropriations over this period tells a surprising story about state priorities. Half of the $129 million went to six communities. St. George and St. Paul, communities with a combined population of less than 900, have received over $27 million, or 20 percent of all state funds for port development. Other state priorities are the Nome port, where state appropriations to date are $12 million; the Seward Marine Industrial Park, $10 million; Homer's new boat harbor, $6.8 million, and the Valdez commercial boat harbor, $5 million.

The state is hedging its bets between port development in Anchorage and a port in the Mat-Su Borough. Eight million dollars has gone to Anchorage for port improvements and $6 million to the Knik Arm crossing, which will provide essential access for port development in the Mat-Su Borough.

The appropriations also suggest a strategy of concentrated investment. Six communities received a combined total of 50 percent of all appropriations. Sixty communities each received less than 1 percent of funds!

One can't help but wonder whether concentrated investment is an intentional strategy, a function of the high cost of port development, or the result of assorted incremental decisions?

A port for St. Paul and St. George was in the works for many years. It was the pulling out of the National Marine Fisheries Service that appears to have advanced these projects to the state's highest priority. This is another instance in which defederalization precipitated state action. But a basic question remains: Why has the state invested what may amount to $40 million into two ports for St. Paul and St. George, when the need is so great in other communities as well?

A NEW PATH USING PROVEN APPROACHES

The pressures for improved transportation services in many parts of Alaska will grow rather than diminish. Continued withdrawal of federal support on many levels is almost a certainty. As a consequence, the need for the state of Alaska to clarify its role in the provision of transportation services has never been more pressing.

In 1982, we advanced two approaches to transportation development which still apply:

1. Adoption of a functional classification system which provides an organized approach to evaluating transportation needs for access and economic development.

2. Establishment of minimum service criteria for assuring adequate access by air, sea or land to Alaska communities.

Both of these approaches are designed to rationalize funding decisions.

The functional classification system classifies a community according to the transportation functions it serves. A community can be designated as either a local, regional or transshipment center.

> Local transportation centers are final destination points. St. Paul and St. George are local ports. In a transportation sense, they would perform the simplest function of receiving or sending passengers or cargo for a single community.
>
> Regional transportation centers offer transportation services for the export of goods, for local consumption or for redistribution to neighboring communities or a single region hinterland. Juneau and Nome are examples of regional transportation centers.
>
> Transshipment centers handle transportation services for local consumption, direct export, or resupply of more than one region. Anchorage is the obvious example.
>
> Resource or Special Commodity Facilities are essentially single-purpose transfer facilities. This type of facility could be located in a community or outside.

By itself, the functional classification system describes the transportation needs and role of a community or facility. The kinks in the system remain to be worked out. But a functional classification system can be a means to establish a set of design requirements and funding guidelines that reflect a port's function within its region

and within the statewide system of ports. The functional classification system also provides a sensible framework for each port in Alaska to develop its own business plan and forecast of future activity levels.

The second approach to selecting transportation projects could be an even more important factor for rural Alaska. This is the concept of minimum service. It is an old idea. The federal government embraced the concept years ago that all communities have a fundamental need for transportation service. The government went to great lengths to establish the appropriate levels of service and subsidy to a community. Subsidized air service supported many small communities and a young aviation industry.

The state of Alaska, through its program of public works, has year after year endorsed the same principal, but on an ad hoc basis. The time has come to apply some standards to minimum service.

While this may be new territory for the state of Alaska, the U.S. government and foreign governments have tried many approaches. Alaska has the advantage of ample capital resources and the benefit of the prior experience of other governments.

The agenda is clear. The state of Alaska must:

- decide what level of transportation service it will guarantee to rural Alaska;
- establish design standards that are tied to a functional classification system or to some other means of establishing need; and
- develop funding standards that address the level of transportation services needed in the most economical manner.

The appropriations process in which one-third of the capital budget is parceled out to the Administration to use at its discretion; one-third to the House; and one-third to the Senate, has in the past undermined schemes for a more rational approach to public works programming. Perhaps the fact of a diminishing capital budget will in itself necessitate a more cooperative approach to appropriations decisions.

But in the meantime, DOT/PF can begin in its own backyard to set sensible standards for port development, much as it has done for the state airport system. With a little luck, this may prove to be the course of least resistance. A good public works program in place for port development may be just what the Legislature is looking for. Soon enough, when the capital budget shrinks, legislators may need some way to explain why this year they couldn't bring home the bacon.

Table 1. Port projects 1981-84 in thousands of dollars

Communities	Budget	Communities	Budget
Akutan	$178	Metlakatla	$500
Alakanuk	300	Meyers Chuck	320
Aleghagik	1008	Miscellaneous	150
Anchorage	8000	Naknek	2170
Angoon	345	Nenana	2000
Bethel	2215	New Stuyahok	25
Chenega	900	Newtok	110
Chignik	25	Nome	12000
Coffman Cove	115	Noorvik	30
Cook Inlet Region	390	Nuigsut	50
Cordova	3800	Nulato	110
Craig	200	Old Harbor	365
Dillingham	700	Ouzinkie	25
Diomede	300	Pelican	500
Edna Bay	100	Petersburg	1900
Elim	300	Point Baker	20
Emergency Fund	200	Point Lay	350
False Pass	25	Port Graham	75
Gustavus	300	Port Lions	1650
Haines	400	Port Protection	120
Hole In The Wall	110	Port San Juan	1250
Holy Cross	100	Port Supplement	4000
Homer	6800	Ruby	200
Hoonah	145	SE Harbor Condi	50
Hydaburg	25	Saint Mary's	500
Hyder	150	Sand Point	400
Illiamna	450	Saxman	1770
Juneau	3200	Seldovia	500
Kake	1500	Seward	10403
Kasaan	125	Shageluk	60
Kenai	1000	Shungnak	45
Ketchikan	140	Sitka	820
Kiana	100	Skagway	20
King Cove	300	St. George	10460
Kipnuk	35	St. Paul	16737
Klawock	175	Tatitilek	50
Knik Arm	6000	Tenakee	1100
Knudsen Cove	200	Valdez	5000
Kodiak	4740	Whittier	250
Larsen Bay	450	Wrangell	890
Latouche	3500	Yakutat	2800

Table 2. Port projects by size 1981-84 in thousands of dollars

Communities	Budget	Communities	Budget
St. Paul	$16737	Meyers Chuck	$320
Nome	12000	Alakanuk	300
St. George	10460	Diomede	300
Seward	10403	Elim	300
Anchorage	8000	Gustavus	300
Homer	6800	King Cove	300
Knik Arm	6000	Whittier	250
Valdez	5000	Craig	200
Kodiak	4740	Emergency Fund	200
Port Supplement	4000	Knudsen Cove	200
Cordova	3800	Ruby	200
Latouche	3500	Akutan	178
Juneau	3200	Klawock	175
Yakutat	2800	Hyder	150
Bethel	2215	Miscellaneous	150
Naknek	2170	Hoonah	145
Nenana	2000	Ketchikan	140
Petersburg	1900	Kasaan	125
Saxman	1770	Port Protection	120
Port Lions	1650	Coffman Cove	115
Kake	1500	Hole In The Wall	110
Port San Juan	1250	Newtok	110
Tenakee	1100	Nulato	110
Aleghagik	1008	Edna Bay	100
Kenai	1000	Holy Cross	100
Chenega	900	Kiana	100
Wrangell	890	Port Graham	75
Sitka	820	Shageluk	60
Dillingham	700	Nuigsut	50
Metlakatla	500	SE Harbor Condi	50
Pelican	500	Tatitilek	50
Saint Mary's	500	Shungnak	45
Seldovia	500	Kipnuk	35
Iliamna	450	Noorvik	30
Larsen Bay	450	Chignik	25
Haines	400	False Pass	25
Sand Point	400	Hydaburg	25
Cook Inlet Region	390	New Stuyahok	25
Old Harbor	365	Ouzinkie	25
Point Lay	350	Point Baker	20
Angoon	345	Skagway	20

Source: Session Laws of Alaska, 1981-1984

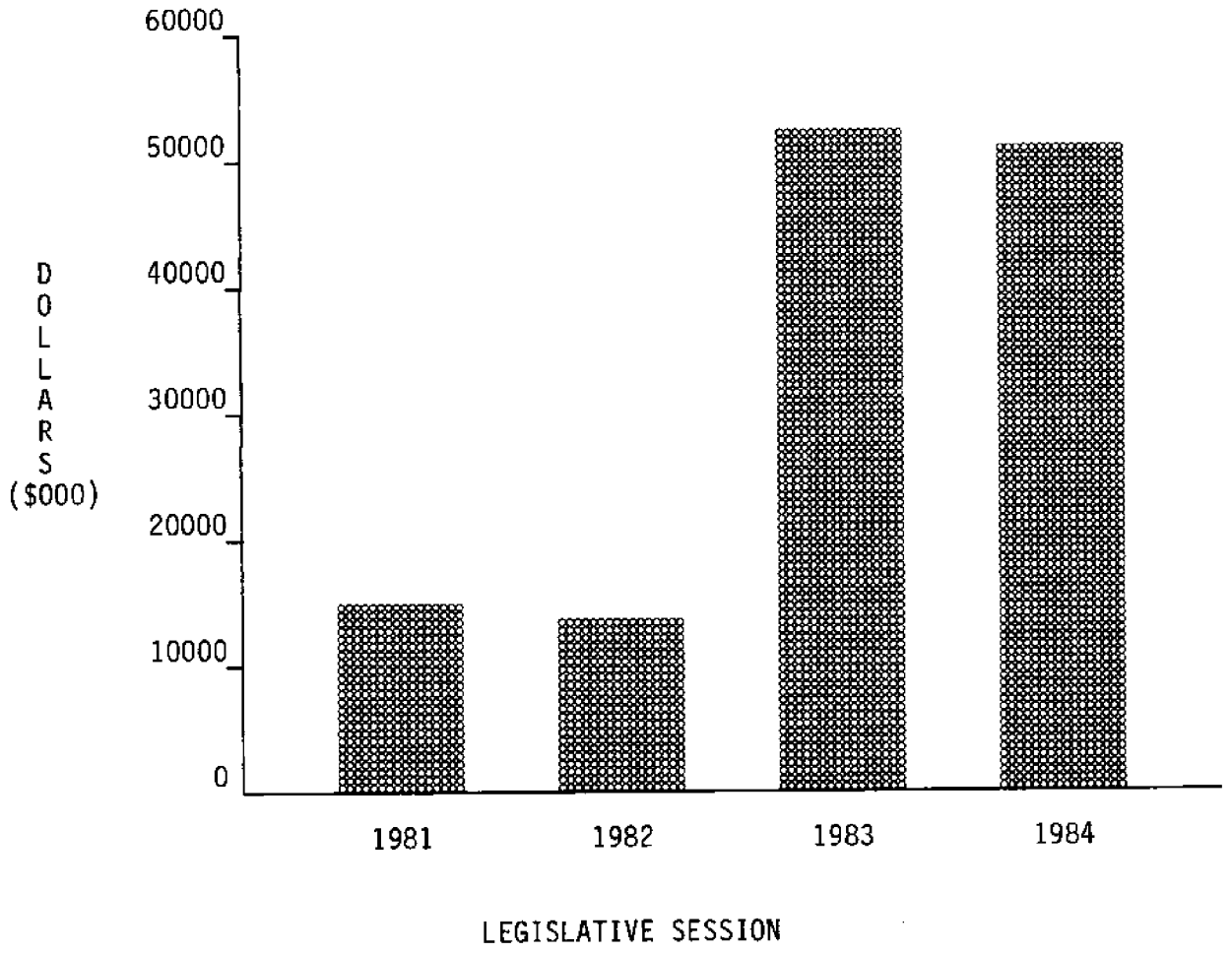

Figure 1. Annual appropriations for ports.

SERVICING RURAL AREAS - SELECTED EXPERIENCES WORLDWIDE

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SUMMARY

Particularly within the state of Alaska, there is a great need for an efficient water transport system. Alaska is unique because of its many small coastal and river communities. Although the populations of these communities, classified here as remote, have a slower growth rate than communities in Interior Alaska, they are unquestionably experiencing economic growth and development. These increasing needs must be met with cost-efficient technology. With the currently limited road and rail networks, water transport is the key system.

It is imperative that port planners have access to information on the financial efficiency of a proposed project so as to determine whether future revenues from port operations will be sufficient to eliminate the debt incurred in development financing. One question that may need to be addressed in planning a port is whether financial self-sufficiency will be a requirement for funding of further development.

Current transportation policy, the condition of existing ports, and proposals for future port development in Alaska will be discussed in other papers presented at the Maritime '84 Conference. The intent of this paper is to extend the marine transportation discussion by taking an overview of marine transportation servicing of other remote areas of the world.

Recently, interest has been focused on expanding the world market for Alaska's resources (oil, gas, coal, fish, and other products). However, such expansion will require new and improved port facilities to allow increased and less costly access. In some instances, vessels are providing service to areas within the state where port facilities are lacking; but more often, lack of facilities makes servicing remote areas cost prohibitive. This study was intended to help identify the most economically efficient financing

strategies, and to examine the types of facilities that have proved successful in other areas.

METHODS

A letter requesting extensive information was sent to several port authorities of maritime nations. In particular, information was requested pertaining to small ports, in hopes that material pertaining to foreign ports with comparable problems to Alaska's could be useful in a discussion of Alaska's marine transportation infrastructure.

The following information was requested:

- General port and harbor information
- Information on cargo imports and exports in regard both to types of commodities and to destinations
- Current facilities and port conditions
- Information on governing authority and on policies for port operations financing
- Financial statements, contributions
- Planned improvements and developments

RESULTS

Materials were received from the following five areas:

Norway
Brazil
Virgin Islands
Commonwealth of the Northern Mariana Islands
British Columbia

In each case, information was received from one to two ports only. Most of the ports responding were among the most profitable and most important in their countries; information on the more remote areas was not often available.

Norway

Most of the people of Norway live along the coast, approximately 21,000 km in length. Although aviation plays a major role in transportation, shipping and sea transport are of great importance to trade and industry. Passenger traffic, particularly on the west coast and in northern Norway, and the offshore oil and gas industry in the North Sea, have become increasingly important since the 1970s;

however, the main shipping industry in Norway is the fisheries industry.

The Port of Oslo is the most important import/export area, handling six million tons per year. Although the coast is lined with ports, most of them are small (one or two berths). Five or six are important for national trade, and 12-15 could be classified as regional ports. About 60 public ports are managed by the harbor board and a port manager. A large number of the other public ports serve the fisheries and single enterprise as bulk cargo terminals.

Industries such as oil refining usually own the terminals involved in shipping their product, although some industries have terminals in municipal harbors, administered by local boards and subject to local regulations and dues.

The Norwegian Coastal Administration is represented by the Coast Directorate and five coastal districts. The coastal districts cover roughly the same activities as the Coast Directorate, but are limited in authority. The Coast Directorate, under the control of the Ministry of Fisheries, regulates the harbor, lighthouse and pilotage services. It is also responsible for the planning and development of fairways and channels along the main navigational routes, for which funds are allocated directly through the national budget. The Directorate is divided into four divisions: the personnel and budget division, the port and harbor division, the lighthouse and buoyage division, and the pilotage division.

In an effort to transport goods as efficiently as possible, Norway tries to encourage shipping transport when moving goods over long distances. Although the government gives independent authority to the public ports through the Coast Directorate, it can influence developing of ports through its planning procedures. More importantly, since almost all public ports must receive loans for their investment plans, the government can control loans from the public bank system. Other efforts to improve the shipping industry include: investment in port facilities, financing of port constructions, subsidies, and dues or taxes. One investment plan is the National Development Fund, developed for the growth of the west coast and northern Norway. It can potentially be used for subsidizing planning and constructions in public ports.

According to the Harbor Act, public ports must balance income and expenditures. In the case of a deficit, the ports are subsidized by the municipalities. As this occurs, however, the potential for ports to lose their independence increases.

It may be that Norway has too many ports in proportion to the volume of transported goods resulting in lower efficiency and lower economic returns for the shipping lines and ports. It was tentatively estimated in one study that Norway's shipping needs could be accommodated with just 20 ports.

Brazil

Brazil has a national port system, PORTOBRAS, created through a constitutional clause in 1975. It is the central controlling authority for ports of all states of Brazil. PORTOBRAS is intended to be the beginning of a gradual integration of the entire National Ports System into a single legal regime guided by similar administrative, technical, and financial determinations. The federal government of Brazil is responsible through PORTOBRAS for the legislation of the nation's ports.

Centralization of the port systems by this agency is justified by the need to establish a strict investment priority policy. PORTOBRAS is responsible for the implementation and supervision of port policies. It maintains supervision and control over the technical, administrative, economic, and financial aspects of all the ports. The PORTOBRAS organization holds a controlling share, 79.49 percent, of capital stock for the organized ports of the state of Bahia. The government of the state of Bahia holds the remaining 20.51 percent of the capital stock.

A State Authority for Ports, Rivers, and Waterways administers the ports under a federal grant. PORTOBRAS, in 1977, created the Companhia das Docas do Estado da Bahia (CODEBA), a mixed economy company, for this purpose. In the State of Rio Grande do Sul, the Departamento Estadual de Porto, Rios e Canais (DEPRC) is a similar agency. Although these companies are organized and overseen by the government, they are separate entities, managing finances and development. These agencies, or public companies, are responsible for the administration of the organized ports, although they also may perform dredging, signaling and

improvement works on the state's rivers, and maintenance of the breakwaters. In the case of Rio Grande do Sul, these activities are carried out under federal grant funds.

Virgin Islands

The Virgin Islands is the southeasternmost possession of the United States. The island of St. Croix is the largest, 84 square miles. It has four principle ports under United States jurisdiction.

The islands could be described as remote with respect to the U.S. mainland. They are dependent on air and sea transportation for even basic commodities, and for tourism--their primary industry.

The Virgin Island Port Authority (VIPA), a semi-autonomous sector of the Virgin Island government, was created in 1968. It is mandated to develop, operate and maintain all ports of entry, both air and marine, for the islands of St. Croix, St. Thomas, and St. John. The Authority is represented by a governing board of nine members representative fo the three islands. Five members are delegated from the Cabinet, and the remaining four from the private sector. VIPA controls both airport and marine services and facilities.

Income for marine and airport transportation has three primary sources: cash, receivables from the U.S. Government, and receivables from the government of the Virgin Islands. Cash revenue is derived mostly from landing fees and rentals charged for harbor facilities at St. Thomas and St. Croix. The Authority is empowered to establish and charge such fees and dues as are necessary to permit the recovery of facility costs.

Contributions from the U.S. Government, totaling over $8 million in 1982, include: grants from FAA for specific capital projects, interest earned on FAA grant funds, land received from the U.S. Government, grants from the U.S. Congress for specific capital projects, and grants from EDA for specific capital projects.

Contributions by the government of the Virgin Islands are primarily allotments for specific capital projects, although they also provide in some cases for working capital and assets.

Saipan

Saipan, of the Northern Mariana Islands, is about 13 miles long. Its harbors are protected by fringing reefs. Along the northern, eastern, and southern coastlines are moderate to steep cliffs and slopes.

Saipan's commercial ports can accommodate small to medium-sized tankers and freighters. According to 1980 data, inbound cargo was over 70,000 tons, and outbound cargo less than 6,000 tons. Transshipment services are provided to the smaller areas on a weekly basis. Guam is the major transshipment center.

The port system of Saipan is controlled through the Commonwealth Ports Authority, which is responsible for the operation, maintenance, and improvement of all airports and seaports within the Commonwealth. In 1981, Public Law affected a transfer of the former Mariana Islands Airport Authority, as well as the existing seaports formerly under the control of the Department of Public Works, Port Control Division.

Revenues are derived substantially from landing fees from the air carriers providing scheduled flight services to Saipan, as well as from lease fees from the Saipan International Airport prime concessionaires, who prepay for a number of years.

As with the practice of leasing out airport facilities to private companies (concession space, car rentals), it is the policy of the Commonwealth that any shipping services be handled by the private sector. Stevedoring, terminal operation, and pilotage are a few such services.

Administrative operations and costs of airport and seaport divisions operate under the same governing authority.

Interest on time certificates of deposit is an important factor of income for the Seaport Division. Another equally large source of income is contributions, primarily from the Commonwealth of the Northern Mariana Islands for the Seaport Division and from the U.S. Federal Aviation Authority (FAA) for the Airport Division. Contributions from the Commonwealth are primarily based on Seaport Division income.

Port of Nanaimo

The Port of Nanaimo, situated in British Columbia between Vancouver and Seattle on the East Coast of Vancouver Island, is now one of the world's leading export centers of lumber, pulp, and newsprint. Today, barge transshipments are received from the Pacific Coast--Alaska to California. Primary exports are lumber, pulp, plywood, newsprint, and kraft; while primary imports are machinery, clothing, leather, general cargo, and salt cake.

The North Fraser Harbor, which includes the Port of Nanaimo, is the sole Commission Harbor in Canada that is not oriented to deep-sea shipping. It is a shallow draft, tidally influenced waterway that serves the needs of the many industries and communities that line its banks, and further acts as a vital connecting waterway for the movement of cargoes destined for world markets through the adjoining ports of Vancouver and New Westminster.

Set up in 1961, the Nanaimo Harbor Commission (NHC) was intended to provide efficient management and planning. The commission is made up of five people from the business community. It has been able to remain completely self-sufficient. If they are not able to be self-sufficient, harbor commissions are dissolved and the ports made part of the National Harbors Board. The NHC is virtually autonomous, with the authority to make all local decisions on its own and to arrange its own financing. The harbor receives no subsidies from the federal government. Its own revenue resources are sufficient to cover operating expenses and capital projects.

Funds are generated within the harbor area of Nanaimo from the commission's business activities, which involve operating port handling facilities for forest products, foreshore leasing to upland owners, and collecting moorage fees for commercial and pleasure boats. Other revenues are obtained from leases in an agreement with the provincial government. The commission leases lands and water lots within the harbor to private industries, returning 50 percent of the lease revenue to the provincial government.

CONCLUSION

The state of Alaska, with its recent oil wealth, is looking at opportunities to expand its industries and develop new ones. Ports, harbors, airports, and roads are the basic infrastructure requirements to this end.

Therefore, it should be a state priority to develop an efficient multi-modal transportation system for Alaska.

In the smaller areas of this study, small ports such as those in Norway and the Commonwealth, as well as in the coastal communities of Alaska, are at an obvious disadvantage in development. Harbor revenue is likely to be insufficient for financing development without government aid. At this conference, port development plans and options are being proposed for our state; but plans are only useful if the financial backing needed to implement them can be found.

The question of how the state of Alaska should finance its port system is obviously not going to be answered from this small survey. However, we can look at how some ports have developed and at what they have found successful.

The Port of Nanaimo has had the greatest economic growth of those included in this study. Again, it is completely independent of governmental control, governed by a harbor commission, a virtually autonomous authority. In Norway, on the other hand, the coast is lined with many small ports. Technically, these ports have independent authority; however, they are not always financially independent. Several options were mentioned for government aid.

This research project was intended as an introduction to the study of worldwide experience in servicing remote areas by water transport. In the time frame provided for research the response to requests for information was heartening but much more can be learned. It is hoped that this project will serve as direction for more detailed interaction with remote marine servicing areas worldwide.

Regulatory Impacts

SOME REGULATORY CONSIDERATIONS IN MAJOR MARITIME CASUALTIES

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LIMITATION OF LIABILITY ACT

Because of Alaska's size, the remoteness of many of her sea lanes and fishing grounds and the harshness of her weather and of the North Pacific, Alaska maritime casualties often are disasters involving the loss of a vessel and entailing expenses beyond the means of the normal vessel owner or operator. As a result, vessel owners probably seek the protection of the Limitation of Liability Act[1] more often in Alaska than in any other jurisdiction in the United States. Section 183 (a) of the Act provides:

> The liability of the owner of any vessel, whether American or foreign, for any embezzlement, loss, or destruction by any person of any property, goods, or merchandise shipped or put on board of such vessel, or for any loss, damage, or injury by collision, or for any act, matter, or thing, loss, damage, or forfeiture, done, occasioned, or incurred, without the privity or knowledge of such owner or owners, shall not, except in cases provided for in subsection (b) of this section, exceed the amount or value of the interest of such owner in such vessel, and her freight then pending.

This provision permits a vessel owner to limit his liability in the event of a casualty to the value of the vessel after the casualty, plus her pending freight, if the cause of the damage was not within the owner's "privity or knowledge." In the event of a total loss, the limitation fund can be zero.[2]

The purpose of the Limitation Act is to encourage participation in America's merchant fleet. The assumption is that if an owner of a vessel is careful in preparing the vessel for sea and if someone else causes the casualty, the owner's liability for the venture should not exceed his investment in the vessel.

Whether or not the vessel owner is entitled to limit depends on whether the owner is found to be privity to or have knowledge of the cause of casualty. The question is of the privity or knowledge of the owner himself or of someone to whom he has expressly delegated his managerial authority.[3] This is distinctly different from the owner of a vessel being held responsible for the negligent acts of his master or crewmen while the vessel is at sea. Those acts presumably are beyond the owner's control (although much less so with the advent of the radio) and are the types of negligent acts from which the Act was specifically designed to protect the owner.[4]

The limitation fund is determined by the value of the vessel after the casualty, and the pending freight. Norwich and New York Transportation Co. v. Wright, 80 U.S. 104 (1871). The value of the vessel includes not only the value of the bare hull, but also of the appurtenances of the vessel used in the furtherance of the vessel's voyage. Appurtenances include stores and fuel,[5] refrigerated containers,[6] and spare parts.[7]

The pending freight that must be contributed to the limitation fund is the money earned by the vessel during the voyage on which the casualty occurs.[8] Many bills of lading and charter parties specifically provide that the freight is earned when the vessel starts her voyage. In those instances, the entire freight for a voyage is probably a part of the fund, despite the fact that the casualty might occur only an hour after the voyage begins.

The ability of a vessel owner to limit his liability can have a dramatic effect. Fish processing vessels can cost two to three million dollars, and many seagoing freighters and tankers cost between six and ten million dollars. Supertankers can substantially exceed those values. The possibility of paying nothing when a major casualty occurs offends many, including the Supreme Court.

Supreme Court Justice Black, in a dissenting opinion, said that

> [j]udicial expansion of the Limited Liability Act at this date seems especially inappropriate. Many of the conditions in the shipping industry which induced the 1851 Congress to pass the Act no longer prevail. And later Congresses, when they wished to aid shipping, provided subsidies paid out of the public treasury rather than subsidies paid by injured persons.[9]

Despite the hostile judicial attitude toward the Limitation Act, Congress has resisted efforts to repeal it. It is an immensely useful tool to vessel owners.

SITUATIONS IN WHICH LIMITATION IS NOT AVAILABLE

A vessel owner cannot limit his liability arising from oil spills[10] or sunken vessels.[11] Those situations involve casualties which are especially frequent and costly in Alaska. In each of those instances, prompt decisions must be made by vessel owners, often based on inadequate information. The decisions may have financial consequences that can mean the difference between the vessel owner's continued economic existence or extinction.

Oil Pollution

The Clean Water Act[12] includes a comprehensive oil spill prevention and cleanup scheme, and penalty provisions. One penalty provision provides for administrative penalties to $5,000.[13] The amount assessed depends on the size of the owner's business, the effect of the penalty on the owner's ability to continue in business, and the gravity of the violation. In the alternative, a civil penalty up to $50,000 is recoverable in a court action. The amount of a civil penalty depends on the nature and extent of the oil spill, the degree of success of the owner's efforts to minimize the effects of the spill, the effect on the owner's business, and the seriousness of the violation. If the spill was caused by willful negligence or misconduct, the civil penalty can be increased to $250,000.[14]

In addition to penalties that can be assessed, the government is entitled to recover the cost of cleaning up an oil spill unless the discharge is caused solely by an act of God, an act of war, the negligence of the United States government or the negligence of a third party. The vessel owner's liability for the costs of cleaning up an oil spill is limited to $125 per gross ton of an inland oil barge or $125,000, whichever is greater. Liability for a vessel carrying oil or hazardous substances as cargo is the greater of $250,000, or $150 per gross ton. For other vessels, the limit is $150 per gross ton. If the oil spill is caused by the willful negligence or misconduct of the owner, the owner is liable for the total cost of cleanup, regardless of these limits.[15] The liability for an oil spill's cleanup costs does not depend on the fault of the

owner or the vessel; the mere fact of the discharge itself renders him liable for up to the stated sums.[16]

In connection with the penalties and the liability for cleanup cost, it is important for the vessel owner to know two other requirements of the Act. Any person in charge of a vessel is required to "immediately notify the appropriate agency of the United States Government" as soon as he has knowledge of an oil discharge.[17] Failure to report the discharge subjects one to a penalty of not more than $10,000 and one year in prison. The reporting requirement is conditioned upon the government not using the report against a person in a criminal case.[18] Also, the government is authorized to remove the oil discharge itself unless it "determines such removal will be done properly by the owner or operator of the vessel ... from which the discharge occurs."[19]

The Clean Water Act thus requires a vessel owner to report an oil spill and allows him the option of cleaning up that spill in lieu of the government doing it. Soon after the oil spill, the vessel owner must make an assessment of whether he can clean up the spill for less than the $125 or $150 per gross ton limit, and if so, whether he can do it for less than the Coast Guard can. If he correctly determines that he can clean up the oil spill for less than the Coast Guard and for less than the per gross ton limit, it is in his economic interest to begin cleanup. If, however, neither the vessel owner nor the Coast Guard can clean up the oil spill for less than the gross tonnage limit, it is always in the vessel owner's best interest to have the Coast Guard undertake the cleanup, because the owner is not entitled to offset the amount he spends for oil containment and cleanup from the amount he owes to the government for costs.[20] Unfortunately, this situation penalizes the good faith of vessel owners who are anxious to contain oil spills. If an owner proceeds to clean up the oil spill himself, and he later finds that the cost of cleaning up the oil spill will be more than the per ton limitation amount, and he then turns the clean up over to the Coast Guard, which spends in excess of the per gross ton limitation amount, the owner will have to pay the Coast Guard the full limitation amount and will not be credited with the amount he spent before turning the clean up over to the Coast Guard. It is therefore financially imprudent for a vessel owner to expend money if he is correct in determining that the cost of cleaning up the oil spill,

whether done by the vessel owner or the government, will exceed the per ton limitation.

The government has tried to get around the $125/$150 per gross ton limit on oil spill cleanup costs recovery by seeking actual costs under the Rivers and Harbors Act of 1899[21] and under common law maritime tort and nuisance theories. The government's efforts in that respect have been unavailing because the statutory remedy is exclusive, since Congress has enacted a specific remedy that is contrary to judicially created remedies for the same wrong.[22] As a result, the Clean Water Act, while creating a duty to pay in addition to the fund established under the Limitation Act, sets its own limitation for liability for oil spills and may not be circumvented by the government on other theories unless there is willful misconduct or negligence.

If the oil spill is caused by an act of God, an act of war, or the negligence of the government or a third party, the vessel owner can refuse to participate in any cleanup operation, or he can proceed to clean up the spill himself and seek recovery for the costs from the government by application to the United States Court of Claims.[23]

The United States Supreme Court has held that the Clean Water Act, or more correctly its predecessor, the Water Quality Improvement Act, does not preempt state antipollution statutes, since Congress did not manifest an intent to preempt state pollution laws that do not conflict with the federal statutory provisions.[24] As a result, a state is able to recover its own oil spill cleanup costs unless the provision under which it is acting directly conflicts with a provision of the Clean Water Act. Such a conflict rarely occurs.

Oil pollution from a vessel in Alaska waters creates several liabilities under the Alaska Environmental Conservation and Oil Pollution Control Acts.[25] Unlike the liability which the federal oil pollution laws create, state oil pollution liability is subject to limitation under the Limitation of Liability Act. State suits may be brought by persons and governments to collect for the full amount of any actual damage caused by the pollution. The polluter is liable for these damages, regardless of fault.[26] In addition, the state can collect any direct and indirect costs associated with the abatement, containment or removal of the pollutant, plus the cost of restoring the

environment to its former condition and the incidental administrative costs.[27]

Civil penalties may also be assessed for the discharge of oil into state waters.[28] These penalties may be assessed on a dollars per gallon basis up to $100 million, depending upon the type of oil discharged and the location of the discharge. The penalty will be assessed jointly and severally against (a) any person causing or permitting the discharge; (b) the owner and operator of the vessel; and (c) the owner of the oil (under limited circumstances). Although not clearly written, the statute appears to intend that the liquidated damages under AS 46.03.760 apply to discharges of oil of 18,000 gallons or less and the more substantial civil penalties of AS 46.03.758 apply to spills in excess of 18,000 gallons.

In short, a person or vessel spilling oil can expect to pay damages to any person who is injured in his person or property, damages to the state for injury to the environment, and perhaps substantial penalties as well. The exposure under the Alaska Act is enormous. It will come as some relief to vessel owners to know that the state penalties are subject to the federal Limitation of Liability Act if the vessel owner successfully invokes its application.[29]

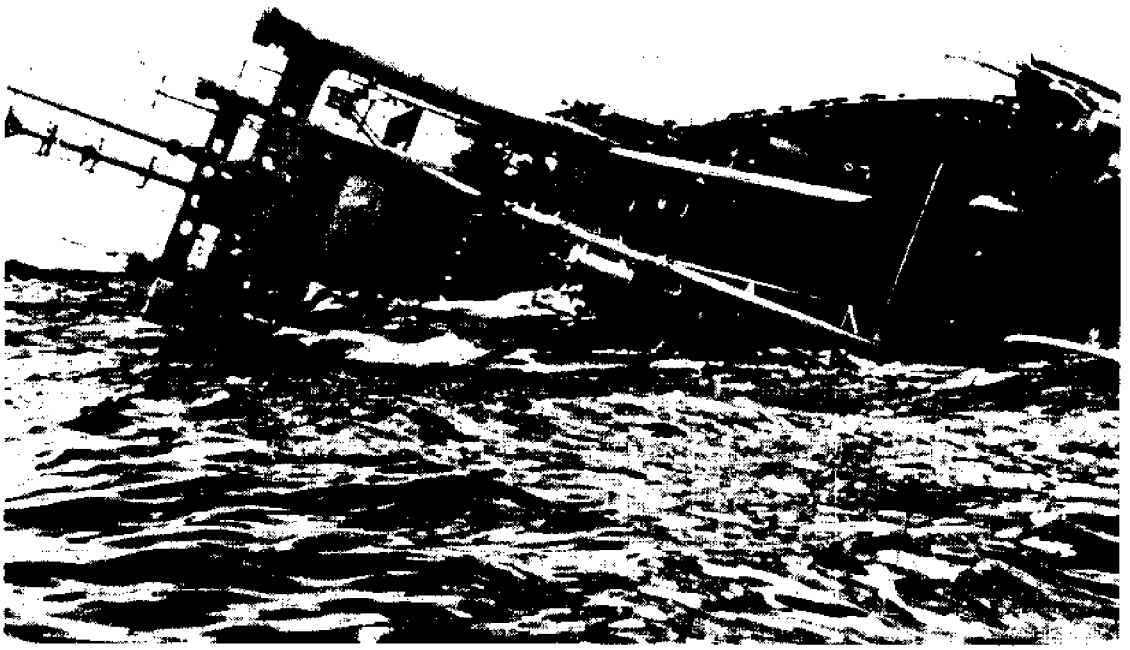
Wreck Removal Act

When a vessel sinks in navigable waters, the vessel owner may find himself within the provisions of what is commonly known as the Wreck Removal Act.[30] Section 15 of the Act[31] states in part:

> And whenever a vessel, raft, or other craft is wrecked and sunk in a navigable channel, accidently or otherwise, it shall be the duty of the owner of such sunken craft to immediately mark it with a buoy or beacon during the day and a lighted lantern at night, and to maintain such marks until the sunken craft is removed or abandoned, and the neglect for failure of the said owner to so do shall be unlawful; and it shall be the duty of the owner of such sunken craft to commence the immediate removal of the same, and to prosecute such removal diligently, and failure to do so shall be considered as an abandonment of such craft, and subject the same to removal by the United States as provided for in [the statute].

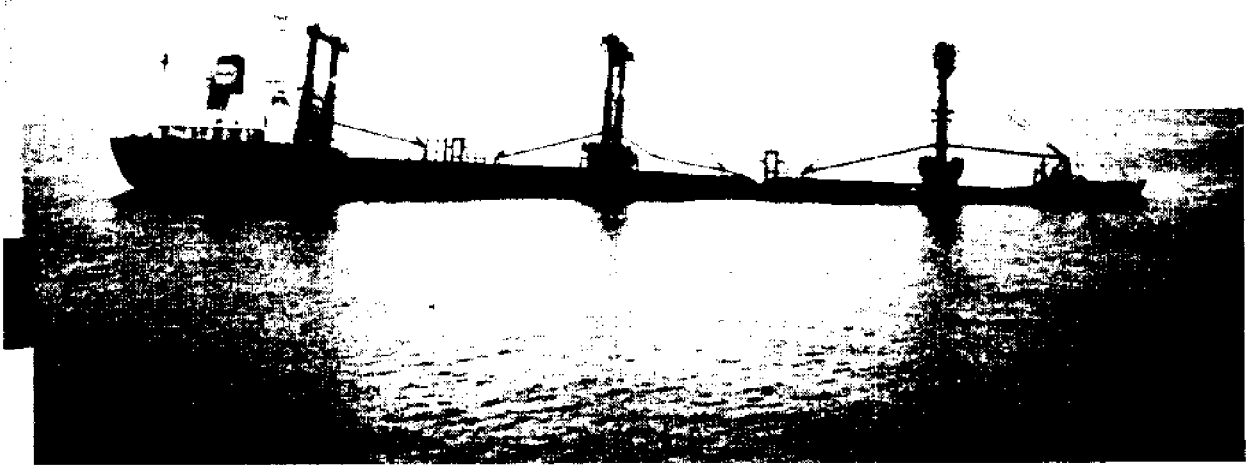
The Wreck Removal Act has been construed to impose a nondelegable duty on the owner to properly mark the wreck. The owner is personally liable for any damages to another vessel caused by his failure to do so.[32] Failure to mark the wreck violates the Wreck Removal Act, constituting fault.[33]

Assuming the vessel owner marks a wreck as required, he must then decide whether he is going to remove it or abandon it to the government. That decision puts the vessel owner in much the same dilemma he faces with an oil spill. If it is ultimately determined that the vessel owner's negligence caused the wreck, the vessel owner is liable personally for the costs of removing the wreck[34] and for any damage caused by the wreck, even if it has been properly marked.[35]



This photograph shows the M/V DAE RIM after it washed ashore on the westernmost tip of Attu Island, the last island in the Aleutian chain. There was an attempted rescue by a Russian salvage tug, but adverse weather conditions and logistical problems in getting the vessel to a port of refuge with the capability of performing repairs forced the tug to abandon the attempt.

The Coast Guard claimed the ship posed a threat of oil pollution, and instigated "clean-up efforts" which consisted of setting explosive charges aboard the vessel so as to open her tanks to liberate and burn all the oil at once. The ship was a total loss, and the government claimed "clean-up" expenses in excess of $420,000, all of which were denied by the owners in litigation against them brought by the Coast Guard. The case is now on appeal in the Federal Circuit Court of Appeals for the Ninth Circuit.



The M/V PAN NOVA (top) and the M/V SWIBON (bottom). These vessels collided near Unimak Pass, and the M/V PAN NOVA sank. The ship and cargo were a total loss estimated at approximately nine million dollars. The M/V SWIBON suffered approximately three million dollars in repair costs and delay. The SWIBON was able to continue her voyage to Anchorage for discharge of steel products, and with the assistance of an escort tug continued to Vancouver, B.C. to undergo temporary hull repairs. The PAN NOVA sank far enough offshore so that wreck removal and oil pollution were not a concern.

If the vessel owner was not negligent, he has the options of raising the vessel and seeking compensation for his costs from the person causing the sinking,[36] or of abandoning the vessel to the Army Corps of Engineers and allowing it to remove the wreck and to seek recovery of its removal costs from the wrongdoer.[37] If a nonnegligent owner abandons the vessel to the Corps, he is not liable for the cost of removal[38] and presumably not liable for damages caused by the wreck, assuming it has been properly marked.

As can be seen, it is very important for the vessel owner to make a preliminary assessment of his own negligence. If a court ultimately decides he was not negligent, he may have spent a lot of his own money removing a wreck, rather than leaving it to be done by the government at its expense. This is a particularly compelling consideration if the third person who caused the casualty that resulted in the wreck has limited assets. In that event, the vessel owner's prospects of recovering his costs from the wrongdoer are bleak. On the other hand, if the vessel owner decides his negligence caused the wreck, he must then decide if he can move the wreck more efficiently and cheaply than the government, and if so, proceed on that basis.

The vessel owner's cost of removal when he is negligent is not subject to limitation through the Limitation of Liability Act.[39] As with the Clean Water Act, the rationale here is that the owner has a personal duty to diligently remove the wreck, and that his refusal or failure to do so is by definition within the privity and knowledge of the owner, obviating the application of the Limitation Act.

The state of Alaska has also enacted legislation involving disabled vessels, commonly known as the Abandoned and Derelict Vessels Act.[40] The Act prohibits a person from storing or leaving "a vessel in a wrecked, junked or substantially dismantled condition or abandoned upon any public water, or at a port or harbor, of the state, without the consent of the agency having jurisdiction of the water, port or harbor, or docked at any private property without the consent of the owner of the property." The Act permits a government official or policeman to remove a derelict vessel from public water if it "obstructs or threatens to obstruct navigation, contributes to air or water pollution, or in any other way constitutes a danger or potential

The M/V MARU NO. 2 (top) grounded in the distance at St. Paul Island, Alaska. The vessel and cargo were a total loss, and ship's bunkers carried on board posed a pollution threat to marine estuaries adjacent to the site of the casualty. Owners initiated clean-up efforts and eventually turned over clean-up responsibility to the Coast Guard, which then detonated explosives on board the ship to liberate remaining oil and burn it in place. The bottom photograph shows what remains of the vessel today, and illustrates why wreck removal was not required--as the wreck does not presently constitute a "hazard to navigation."

danger to the environment," and makes the prohibited conduct a misdemeanor penalty punishable by a fine of not more than $500 or imprisonment for a period of not more than six months or both.[41] A vessel which has been left unattended without the appropriate permission of a government agency, port or harbor or property owner, for a continuous period of more than 30 days, may be seized by the government or a policeman and disposed of by public auction, unless the appraised value of the vessel is less than $100.[42] Once the vessel is seized, the Act requires written notice to be posted on the vessel and sent by registered or certified mail to the owner's last known address and to all lienholders of record, describing the location of the vessel and the intended disposition of it if the owner does not exercise his right to repossess the vessel within 20 days of the mailing of the notice.[43] The owner of the vessel, or a person having an interest in it, may repossess the vessel before the auction upon payment of all costs attendant to the seizure and custody of the vessel. If the person is not the owner he must post bond for the appraised value of the vessel. The bond will be returned if the vessel is not forfeited within one year.[44]

The Act defines a derelict vessel as one which has been left unattended for 24 hours and "is sunk or is in immediate danger of sinking, is obstructing a waterway, or is endangering life or property" or has been moored or left without the permission of the government agency or the property owner, if its certificate number or marine document has expired and the owner no longer resides where the vessel registration indicates, or if the last registered owner denies ownership and the current owner's name or address cannot be determined and there is no other means of identifying the owner. In those instances the state can take a derelict vessel into custody, publish a notice of intended disposition in a newspaper of general circulation, post notices when possible to that affect, and make an effort to notify the owner and other persons having an interest in the vessel. If the vessel qualifies as a derelict vessel and is not repossessed within 20 days after the publication or mailing of the notice, the vessel may be disposed of by negotiating the sale unless two or more persons are interested, in which event it must be sold at a public auction to the highest bidder. If there are no prospective purchasers, the state may dispose of the vessel as junk, donate it to a government agency or destroy it.[45]

There is a serious question about the constitutionality of seizing and auctioning a vessel unless there is some provision for notifying the owner and holding a hearing, either before or immediately after seizure, to determine the government's right to seize. The United States District Court for the District of Alaska recently held that the city of Juneau was liable for the loss of a vessel which it seized and then allowed to sink, because it did not take proper steps to notify the owner and hold a hearing.[46]

Vessel owners are well advised to make sure that the identity and address of the owner is reasonably available on a vessel, and governmental agencies should make sure they employ every reasonable effort to determine the identity of the owner, to notify him of its intent to seize, and to provide for a hearing.

It is unlikely that the Abandoned and Derelict Vessels Act is federally preempted since it supplements, rather than directly conflicts with, the Wreck Removal Act's provisions.[47] It also serves a legitimate government purpose of ridding public waterways and shoreside facilities of unwanted and abandoned vessels, the constitutional defects in the statute notwithstanding.

FOOTNOTES

[1] 9 Stat. 635 (1851), 46 U.S.C. §§ 181-189, as amended in 1935, 49 Stat. 960, and in 1936, 49 Stat. 1479.

[2] The 1935 and 1936 amendments, 46 U.S. § 183(b) - (f), provide that in the case of a "seagoing vessel" the owner's liability shall not be less than $420 per gross ton for any deaths or injuries "arising on distinct occasions to the same extent as if no other loss of life or bodily injury had arisen." Tugs, tow boats, tank vessels, fishing vessels and their tenders, amongst others, are not considered to be "seagoing vessels." A master of a seagoing vessel is conclusively presumed to be a managing agent of the owner.

[3] Coryell v. Phipps (The SEMINOLE), 317 U.S. 406 (1943); The TRILLORA II (Petition of Guggenheim), 76 F. Supp. 50, 1948 A.M.C. 132 (E.D.S.C. 1947).

[4] Maslin v. M/S HEERING LOTTE, 1972 A.M.C. 2203 (D. Md. 1972).

[5] The WALTER A. LUCKENBACH, 14 F.2d 100, 1926 A.M.C. 1281 (9th Cir. 1926).

[6] In re Pacific Far East Line, Inc., 314 F. Supp. 1339, 1970 A.M.C. 1592 (N.D. Cal. 1970).

[7] The BLACK EAGLE, 87 F.2d 891, 1937 A.M.C. 198 (2d Cir. 1937).

[8] Norwich and New York Transportation Co. v. Wright, supra.

[9] Maryland Casualty Co. v. Cushing, 347 U.S. 409, 437 (1954) (Black, J., dissenting).

[10] Steuart Transportation Co. v. Allied Towing Corp., 596 F.2d 609, 1980 A.M.C. 1713 (4th Cir. 1977); United States v. Dixie Carriers, Inc., 627 F.2d 736 (5th Cir. 1980); In re Hokkaido Fisheries Co., Ltd., 506 F. Supp. 631, 1981 A.M.C. 1468 (D. Alaska 1981).

[11] In re Pacific Far East Line, Inc., supra.

12 33 U.S.C. § 1251-1376. The Clean Water Act is the successor to the Federal Water Pollution Control Act of 1972, 33 U.S.C. S 1321, and the Water Quality Improvement Act of 1970, 33 U.S.C. § 1161.

13 33 U.S.C. § 1321(b)(6)(A).

14 33 U.S.C. § 1321(b)(6)(B).

15 33 U.S.C. § 1321(f)(1).

16 In re Hokkaido Fisheries Co., Ltd., supra.

17 33 U.S.C. § 1321(b)(5).

18 Id.

19 33 U.S.C. § 1321(c)(1).

20 Steuart Transportation Co. v. Allied Towing Corp., supra.

21 33 U.S.C. §§ 401-426. Section 13 of that Act, commonly known as the Refuse Act, is codified at 33 U.S.C. § 407.

22 Steuart Transportation Co. v. Allied Towing Corp., supra.; see Isbrandtsen Co. v. Johnson, 343 U.S. 779 (1952); but see United States v. City of Redwood, 640 F.2d 963 (9th Cir. 1981) where the court held the government could recover actual costs under a maritime tort or nuisance theory against negligent third parties, such as a negligent harbormaster.

23 33 U.S.C. § 1321(i)(1); Tanker HYGRADE NO. 18, Inc. v. United States, 526 F.2d 805 (Ct. Cl. 1975).

24 Askew v. American Water Ways Operators, Inc., 411 U.S. 325, 1973 A.M.C. 811 (1973).

25 AS 46.03., 46.04.

26 AS 46.03.822.

27 AS 46.03.760(e).

28 AS 46.03.758.

[29] In re Allied Towing Corp., 1978 A.M.C. 2484 (E.D. Va. 1978); In re Oswego Barge Corp., 439 F. Supp. 312 (N.D.N.Y. 1977).

[30] Wreck Removal Act is usually considered to be sections 15, 16, and 19 of the Rivers & Harbors Act of 1899, now codified as 33 U.S.C. §§ 408-415.

[31] 33 U.S.C. § 409.

[32] The SNUG HARBOR, 53 F. 2d 407 (E.D.N.Y. 1931), aff'd, 59 F. 2d 984, 1932 A.M.C. 964 (2d Cir. 1932).

[33] Id. at 411.

[34] Wyandotte Transportation Co. v. United States, 389 U.S. 191 (1967).

[35] Tennessee Valley Sand & Gravel Co. v. M/V DELTA, 598 F.2d 930, 934 (5th Cir. 1979); Humble Oil & Refining Co. v. The Tug CROCHET, 422 F.2d 602 (5th Cir. 1970).

[36] In re Chinese Maritime Trust Ltd., 478 F.2d 1357 (2d Cir. 1973).

[37] Id.

[38] Wyandotte Co. v. United States, supra; United States v. Raven, 500 F.2d 728 (5th Cir. 1974), cert. denied, 419 U.S. 1124 (1975). See St. Paul Fire & Marine Insurance Co. v. Vest Transportation Co., Inc., 666 F.2d 932 (5th Cir. 1982).

[39] In re University of Texas Medical Branch at Galveston, 557 F.2d 438 (5th Cir. 1977); In re Pacific Far East Line, Inc., supra.

[40] AS 30.30.010 et seq.

[41] AS 30.30.010

[42] AS 30.30.020, .50, .070.

[43] AS 30.30.040.

[44] AS 30.30.060.

[45] AS 30.30.090, .100.

[46] Nolt v. Isadore, No. A81-423 Civ. (D. Alaska May 31, 1984) (Memorandum and Order Granting Partial Summary Judgment).

[47] Cf. Askew v. The American Waterways Operators Inc., Supra (where the Court held Florida's anti-pollution statute was not preempted by the federal Water Quality Improvement Act of 1970, 84 Stat. 91, 33 U.S.C. § 1161). See supra. note 12.

U.S. CUSTOMS LAW ENFORCEMENT AND TRADE FACILITATION: ITS AFFECT ON ALASKA'S MARITIME COMMERCE

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Los Angeles, California

Your originally scheduled Customs speaker was Richard McMullen, Deputy Regional Commissioner. He sends his regrets that he couldn't be here today and his best wishes. Mr. McMullen recently was promoted to North Central Regional Commissioner--he's now a Chicago Cheechako. But his loss of this speaking engagement is my gain and I'm very happy to be here with you. I hope at least that I'll be an honorary sourdough when I leave.

It seems to me that every time I give a speech lately I talk about the changes taking place in the way the Customs Service does business. Well, I only echo the Commissioner of Customs, who said in a recent speech that there had been more changes made in Customs procedures during the past two and one-half years than ever before in Customs history.

But I have to admit Commissioner Von Raab is right. And anyone familiar with Customs would say the same. I'm not going to outline those changes affecting the Lower 48, rather the impact of Customs law enforcement--our highest priority-- and trade facilitation, on Alaska's maritime commerce.

In the marine area, the U.S. Customs Service's primary enforcement and regulatory responsibilities have been, and will continue to be, to enter vessels, crews and passengers arriving from foreign countries. This includes the collection of tonnage taxes and duty on applicable foreign vessel repairs, and examination, entry, duty and tax collection on imported merchandise. It also involves the interdiction of narcotics and contraband, ensuring compliance with U.S. maritime laws such as the Jones and Nicholson Acts, and ensuring compliance with water pollution and safety regulations.

The Jones Act, enacted to protect the U.S. maritime industry and interest, basically prohibits foreign flag, foreign-owned or foreign-built vessels from loading cargo

or passengers at one U.S. point and discharging them at another U.S. point.

The Nicholson Act was enacted to protect the U.S. fishing industry. It prohibits foreign fishing vessels from unloading their cargoes in the U.S.

Violations of the Jones Act in Alaska, particularly by foreign cruise vessels, are not uncommon, but due to strict enforcement are relatively minor when compared to overall shipping by foreign vessels in Alaska. Customs penalties for Jones Act violations are $200 per passenger and are assessed against the vessel operator.

Regulatory changes concerning the Jones Act and foreign passenger cruise vessels have recently been proposed. Under existing regulations, such vessels are restricted on the number of U.S. ports they can visit and on the amount of time they are allowed to spend in each port. The proposed changes could significantly affect Southeast Alaska, as the vessels would be allowed to visit any number of Alaskan ports without time restrictions, provided that passengers would not be terminating their cruise when they disembarked foreign vessels at these ports.

One Customs enforcement effort receiving strong emphasis and positive results since its inception in 1981 is Operation EXODUS--the interception and prevention of critical technology exports to the Soviet Union and unfriendly nations. While Alaska maritime shipping has not, to date, been considered a high-risk threat in regards to illegal and unlicensed exports, overall enforcement efforts in this area will continue to increase. Due to significant advances in communication between Customs and the Department of Commerce and to our improved methods of enforcement, delays to legitimate exports should be minimal.

In our attempts to make the Customs Service a more efficient agency, the application of Customs enforcement in Alaska is proof that we can continue to do more work, faster, in more areas, and with fewer people. When considering that Alaska has more coastline than the continental United States and that traveling from Ketchikan to Dutch Harbor is comparable in distance to flying from Jacksonville, Florida to San Diego, California, it is especially challenging to ensure compliance with customs and maritime law without impeding shipping and commerce.

Allow me to cite some examples of ways in which innovation, and cooperation by the Alaska maritime shipping industry, have helped us achieve that goal. Customs provides out-of-port service to many Alaskan locations, which are not customs ports of entry, either by using part-time inspectors or by detailing full-time inspectors. Examples are Seward, Haines, Kodiak, Whittier, Cordova, Nome, Wainwright, Barrow, Barter Island, Eagle, Fort Yukon, Petersburg, Nikiski, Cold Bay, Dutch Harbor, and King Salmon. When considering that flying an inspector from Anchorage to Dutch Harbor is equivalent (except for the weather differences) to flying from Los Angeles to Chicago, this is no small feat.

Pre-clearance of passengers and vehicles on the Alaska Marine Highway ferries at Prince Rupert, British Columbia, makes use of turnaround time, allows the ferries to proceed as if on a domestic voyage, and precludes inspectional delays at Alaskan ports.

In the past, Customs inspectors have traditionally performed the ritual of physically boarding each vessel on arrival from a foreign port, and this was often done on a reimbursable overtime basis. In a test project, the Pacific Region has recently broken this tradition by permitting preliminary entry by radio upon application by the vessel agents. This test, which has already been very successful in Alaska, not only is cutting down the overtime costs for vessels, but more importantly allows cargo and cruise vessels to immediately begin usual dockside work without waiting for Customs inspectors and many of the previous formalities.

Our enforcement efforts are also increased by allowing our limited inspectional staff to concentrate examinations on selected, higher risk vessels. We have recently begun efforts in Alaska to work more closely with the Coast Guard to make better use of our staffs and resources through joint efforts. Ketchikan Customs inspectors and Coast Guard agents have been conducting joint boardings of Southeast Alaska fishing vessels in order to increase Customs enforcement at the same time as the Coast Guard is enforcing Coast Guard and other maritime requirements.

Although the attempt to consolidate all primary Customs and Immigration operations under Customs at seaports is still pending, Customs inspectors have been routinely performing Immigration inspections at many Alaskan locations where

Immigration is either unavailable, or where the costs and delays borne by vessel operators to fly INS inspectors would be very high, especially when considering that one inspector, given the proper training, can perform the duties of any number of agencies.

Another area where we have increased facilitation and decreased carrier costs is that of vessel supplies. A typical example is when vessel supplies, such as liquor and cigarettes, are withdrawn from a bonded warehouse in Seattle to be loaded on vessels in Kodiak, without the payment of duty and taxes. The normal procedure would be to fly a Customs Inspector from Anchorage, at the carrier's expense, to supervise the lading of the bonded stores on the vessel. We have modified the process in Alaska to allow the shipment to be delivered directly to the vessel while the in-bond paperwork is delivered to Anchorage. Compliance is achieved through periodic spot checks by inspectors. During the past summer, we received substantial information from the Alaska Alcoholic Beverage Control Board that certain vessels were selling such supplies in the Cordova area without payment of duty and taxes and in violation of Alaska state law. We have taken steps to remedy this problem; but as in all areas where we are using selectivity to provide facilitation and cost benefits to interested parties, abuse of the procedures and any lack of self-policing may very well result in termination of such beneficial policies.

The operation of off-shore drilling rigs near the Alaska Coast is an area that gives every indication of growing in the future. While foreign fixed drilling platforms are dutiable upon their attachment to the ocean floor, mobile drilling rigs are treated as vessels for Customs purposes and are not subject to duty. Once they are attached to the ocean floor, however, they become a "fixed point" and all vessels reporting to the rig from abroad are subject to Customs laws. Any foreign cargo or merchandise transported from the rig to the U.S. mainland must be reported and appropriately entered.

Also helping to facilitate commerce are the Foreign Trade Zones, those secure locations technically considered to be outside the Customs terrority of the United States. Merchandise entered into a Foreign Trade Zone does not require payment of duty until it is withdrawn for entry into the U.S. If such merchandise is either destroyed in

the zone or exported from the zone to a foreign country, duty and taxes are never required to be paid.

Valdez, Alaska has recently had the first Foreign Trade Zone approved in the state of Alaska. The initial use will probably be to store pipeline equipment prior to withdrawal for use as needed. At such time, appropriate duty would be paid. A majority of imports currently reaching Alaska arrive in-bond or as already entered and duty-paid from the Lower 48. With the growing economy and needs of Alaska, in combination with the potential of a Foreign Trade Zone like the one at Valdez, we may see an increase in foreign shipments foregoing the circuitous route and arriving directly in Alaska.

Although a Foreign Trade Zone is operated in the manner of a public utility, the presence of a zone enables private companies to apply for manufacturing subzone status. A manufacturing subzone can process non-duty-paid foreign merchandise into a final product which is then classified for duty purposes at the rate of the finished product. Waste products and exported merchandise would be essentially duty-free.

Although Foreign Trade Zones are outside Customs territory, it should be noted that they are within the legal jurisdiction of the United States, and must abide by federal, state, and local statutes. For example, the Nicholson Act would preclude a cannery manufacturing subzone in Alaska from receiving raw fish from a foreign vessel.

Formerly, the law required all commercial importations valued over $250 to be formally entered, necessitating the services of a Customhouse broker or requiring the importer to go through a somewhat complicated education process should he wish to make formal entry on his own. This can be difficult and time consuming for the occasional importer.

President Reagan signed into a law a new Trade Bill effective last month, specifically October 15. Customs has been given the authority to raise the commercial importation value from $250 to $1,250. The higher figure will not take effect until new regulations are published by Customs. I can't give you an effective date at this time.

Among the legislative changes of the Trade Bill are several which should streamline the processing of Customs seizures. The administrative forfeiture level has been raised to $100,000, with no limit for conveyances used to import, export, transport or store illegal drugs. Also, the bond amount to be posted for judicial proceedings has been raised to $2,500 or 10 percent of the value, but not less than $250.

The President also signed into law several new law enforcement measures. I wish I could give you all the provisions that might be of interest to you, concerning not only law enforcement, but the Trade Bill as well. However, I just don't have the necessary time in this format.

But there is one amendment to the U.S. Code I want to mention, especially since Alaska is so immense, having many thousands of square miles of unpatrolled coastline and land border. As some of you may not know, "U.S. Customs is authorized to award to any person up to 25 percent of amounts recovered (not to exceed $250,000, under the old law $50,000) for original information leading to the recovery of any fine, penalty or forfeiture, resulting from an actual or attempted smuggling or other violation of Customs or navigation laws." Of course, confidentiality for the person providing information is of the utmost importance to Customs.

So I appeal to you to assist our officers in combatting our national drug menace and halting fraud against the United States by reporting violations to Customs. We are all citizens of this majestic land. I truly feel that each of us has a moral obligation to do the best we can to protect our citizens and commerce.

Finally, a few words about Customs' aggressive entry into the computer age. Since the early 1970s, Customs has utilized computer terminals at ports of entry as an enforcement tool. We call it TECS (Treasury Enforcement Communications System). For the past several years, we have increasingly incorporated the computer into the commercial part of our business. We are now using computer terminals to control in-bond shipments and, with an established data base, as a selectivity tool. We believe that the majority of Customs transactions are routine and involve lawful business people. So as part of our Automated Commercial System, we initiated, with the cooperation of the international trade community, a

selective inspection and enforcement program called ACCEPT (Accelerated Cargo Clearance and Entry Processing Technique). Basically, ACCEPT targets high-risk importations for inspection. The major benefit to the trade community is that the majority of shipments can be released almost immediately after entry papers are submitted.

The potential of computers in enforcement and trade facilitation is almost limitless. For example, the computerization of vessel manifests in conjunction with other cargo entry procedures could enable the majority of vessel cargo to be entered and released for Customs purposes as it is being unladen from the ship. To quote my Regional Commissioner, Quintin Villanueva, "I think the Pacific Region is on the cutting edge of these programs ... with automation we can handle more cargo with less inspectors ..."

Commissioner Villanueva has begun a study to judge the efficiency of our region's seven districts. In the near future, he intends to identify the procedures used to process passengers and cargo in each district and to recommend how the districts can improve their performance.

We have a very able and professional District Director in Anchorage, Mr. Dan Holland. Regrettably, Dan is on business outside this week, but his Chief Inspector, Jim Hipsher, is with me today. I encourage you to continue your open communication with Dan and his staff. We have initiated many changes in Customs over the past few years. We intend to help, not hinder you, while we become more efficient than ever in apprehending violators of Customs laws. We can help each other to secure our promising future.

Keynote Speakers

MARITIME LEGISLATION OF THE 98th CONGRESS: SELECTIVE ISSUES OF IMPORTANCE TO ALASKA

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I want to speak to you today about some selected maritime legislative issues affecting Alaska that arose in the 98th Congress. I know at tomorrow's luncheon my colleague and good friend Peter Friedmann, Counsel for the Senate Commerce Committee, will be speaking to you about programs affecting the Merchant Marine. I will not duplicate those topics today, but would like to concentrate on four areas in which legislation was enacted, concerning fish processing vessels, the Coast Guard, icebreakers, and the general shipping laws, and briefly project what we can expect in the future in these areas.

FISHING INDUSTRY VESSELS

First, let's turn to the fish processing vessel legislation. This bill, known as the Commercial Fishing Industry Vessel Act (Public Law 98-364), was designed to ensure that certain inspection and manning requirements and exemptions, and other provisions, apply uniformly to all fish processing and fish tender vessels throughout the United States. It makes the inspection exemptions for fish processing and fish tender vessels permanent.

As with many bills, the definitions are the key, and I want to take a moment to discuss them. A "fishing vessel" is defined as "a vessel that commercially engages in the catching, taking, or harvesting of fish." A "fish processing vessel" is defined as "a vessel that commercially prepares fish or fish products other than by gutting, decapitating, gilling, skinning, shucking, icing, or brine chilling." In other words, those activities that merely preserve the fish prior to bringing them to market are not included under the definition of processing, and fishing vessels that engage in these preliminary steps will not suddenly be included in a processing vessel category. Finally, a "fish tender vessel" is defined as "a vessel that commercially supplies, stores, refrigerates, or transports fish, fish products, or materials directly

related to fishing or the preparation of fish to or from a fishing, fish processing, or fish tender vessel or a fish processing facility." In other words, the category includes vessels that transport the fish between vessels, or between vessels and processing plants, and also transport the packing and other materials needed for the fish preparation.

For vessels falling within the defined categories, the exemptions from inspection and manning requirements in the act vary according to tonnage or crew size and, more importantly, are not dependent on the geographic location of the operation or on the type of catch. The important thing to remember is that there is no time limitation; these are permanent exemptions.

Thus fishing vessels, including those that are chartered for a time as fish tender vessels, are exempt from inspection. Fish processing vessels not weighing more than 5,000 gross tons and fish tender vessels not weighing more than 500 gross tons have similar inspection exemptions.

Although fish processing vessels are not subject to inspection unless they weigh more than 5,000 gross tons, mid-size vessels under that tonnage that will enter into service after December 31, 1987, and will have more than 16 people employed in processing, are made subject to certain specific safety requirements. The safety regulations are to be developed by the Coast Guard in consultation with the fishing industry and will deal with navigation equipment, lifesaving equipment, fire protection and fire-fighting equipment, insulation material, storage of flammable or combustible material, and fuel, ventilation, and electrical systems. Under prior law, catcher-processors were treated as fishing vessels if they processed their own catch. So most vessels covered by the new legislation were previously in the fishing vessel category or, if operating in the Pacific Northwest, were exempt from inspection. They were, however, subject to certain minimum safety requirements, which this new list expands for mid-size processing vessels. It can be seen after examination that the extent of additional requirements is not as great as it may first appear.

In the manning area, a special category of able seamen known as "Able Seamen-Fishing Industry" has been created to meet the able seamen requirements on board fish processing vessels. Six months of sea service are required. It is

hoped that this special category will aid in providing an adequate supply of qualified individuals for this industry without creating unreasonable threshold requirements to obtain a document.

The watch requirement for fish processing vessels is a two-watch system, not a three-watch system like that required on other merchant vessels. In addition, the requirements for the percentage of AB's on board have been modified according to the size of the vessel or number of individuals on board. Some vessels that required 65 percent of the deck crew in the past may need only 50 percent, and in some cases the requirement has been eliminated.

One can generally summarize the changes made in this legislation by saying that the larger the vessel, or the more individuals employed on it, the higher the inspection and manning requirements will be. It is expected that the status of most existing processing and tender vessels will not change substantially. You will have to approach any specific problem you may have regarding these vessels from that point of view and see in what category your vessel fits.

Two final comments on this law. First, in addition to the normal crew on board, a fishing, fish processing, or fish tender vessel can transport 12 individuals employed in the fishing industry without being subject to inspection as a passenger vessel. Second, fishing, fish processing, or fish tender vessels of less than 500 gross tons have been given until 1990 to transport general cargo to various places in Alaska not receiving weekly transportation service or to transport goods not accepted by the regular carriers to places that do receive weekly service. This provision encourages cargo service to remote places in Alaska and prevents these vessels from being considered as freight vessels subject to inspection.

I said that I would mention something about the future of legislation in each of these areas. In the area of fishing industry vessels, you should be aware that although the exemptions I've talked about have been permanently codified, there are pressures on the horizon from two sources to increase the inspection and safety requirements. One comes internally from the industry, whose insurance rates have skyrocketed for vessels in these categories. So there is pressure to increase safety on board vessels for

economic reasons. The Merchant Marine and Fisheries Committee intends to hold hearings on this question throughout the country during the next Congress.

Secondly, in a recent New York case, the Occupational Safety and Health Administration (OSHA) was given a favorable decision to board uninspected or unregulated vessels and implement workplace safety requirements. If the litigation continues in the direction that it is now going, uninspected vessels, which would be those I have just been talking about, will be subject to OSHA requirements in the future. This case is currently on appeal to the Supreme Court.

COAST GUARD

Let's turn to the second area, involving the Coast Guard. The Coast Guard Authorization Act of 1984 (Public Law 98-557) includes the recommended funding and personnel levels for this important maritime agency. I mention the authorization law because often the Coast Guard is shortchanged, which results in less service to the maritime industry generally.

In addition, we have noticed the phenomenon in Washington of a preoccupation with Coast Guard involvement in the Caribbean area. The Coast Guard has been involved with the interdiction of Haitian migrants and drug smugglers and more recently has been involved in coastal security for the Grenada operation. As the United States has become more and more preoccupied with the invasion of our shores by illegal immigrants and drug smugglers, more and more of the resources of the Coast Guard have drained to that part of the country.

Without an increase in funding or even an adequate level of funding for the Coast Guard, areas like Alaska will have to give up some resources that are being diverted to this type of effort. There is no disagreement in Washington that the drug initiatives should go on, but those who support the Coast Guard feel that the other important services (such as search and rescue and fisheries law enforcement) that this service has traditionally provided should not be diminished in the process.

In addition, this particular authorization bill served as a vehicle to implement needed provisions that directly affect Alaska. Although each of these items may be small in

nature, to those who are affected by them they can be extremely meaningful. For example, in the Prince William Sound area a change was made in the pilotage laws so that the pilots may board a vessel as it approaches Valdez rather than at Hinchinbrook Entrance, where they were formerly required to board by law. Placing a pilot on board a vessel at Hinchinbrook can be extremely hazardous. With the vessel traffic separation system that is in operation across Prince William Sound, no need exists to have a pilot on board. The practice of waiting until a vessel approached Valdez Harbor to take on a pilot was, however, in clear violation of the law, and vessels ran the risk of uncertain liability as a result of not having a pilot on board.

Let me mention one other change. Logbook requirements for vessels traveling to and from ports in Canada and the United States have been eliminated. Previously this exemption applied only to vessels on the Great Lakes; but through the new law it has been extended to all voyages between these two countries.

In the future, you should look at the trends in Washington with regard to the Coast Guard. The supporters of the Coast Guard emphasize the importance of its at-sea operations--search and rescue and law enforcement. However, as budgets get tighter and more and more requirements are placed on the Coast Guard, a shift of resources occurs and action must be taken to prevent the reduction of needed services throughout the United States.

ICEBREAKING

Let's turn to the third topic, that of icebreakers. Three separate laws have been passed this Congress that have solidified U.S. policy on the operation of its icebreakers: The Coast Guard Authorization Act of 1984, which I just discussed, the Arctic Research and Policy Act of 1984 (Public Law 98-373), and the Antarctic Marine Living Resources Convention Act of 1984 (Public Law 98-623).

These three acts have established the policy that the United States has important security, economic, and environmental interests in developing and maintaining a fleet of icebreaking vessels capable of operating effectively in the heavy ice regions of the Arctic and the Antarctic. The

operation and funding for these vessels have been centralized in the Coast Guard.

This may seem logical, but in the past few years the funding has been divided up among the various user agencies, and Coast Guard operation of these vessels has been subject to their budgetary fluctuations. So we look at these three statutes as maintaining an important capability for the United States and ensuring its proper funding. Specifically, the Coast Guard authorization law calls for the preparation, design, and construction plans for two new polar icebreaking vessels to be operational in 1990.

The future is interesting as one looks at icebreaking services in the United States. Certainly with more and more maritime activity occurring as the Arctic develops, the Coast Guard will be required to offer icebreaking services and will need the vessels to be able to do so. The capabilities of the Soviet Union and other Arctic countries are rapidly increasing, and we have noticed that an icebreaker gap between the United States and the Soviet Union is developing.

In addition, we must focus on the needs of the private sector in this development. We will be determining the extent of icebreaking to be done by the Coast Guard, and what needs will be left to be filled by the private sector. Note that at least one bill was introduced last Congress that would require U.S.-built icebreakers to be used in offshore development.

SHIPPING LAWS

The last topic I want to mention, briefly, is the codification of the shipping laws administered by the Coast Guard, known as Title 46 (Public Law 98-89). This law deals with all aspects of the Merchant Marine, ranging from inspection and manning laws to recreational boating activities. This codification was a major effort of this past Congress and has resulted in a much clearer, well-organized body of maritime law. Although it is not a very exciting law to talk about, I can assure you that it was a long and difficult task for those who worked on it. It will significantly increase awareness of the maritime laws by the affected community, in that it will not now be necessary to employ a maritime attorney to be able to read and understand the law.

The effort was a partial one. Still to be codified as part of Title 46 are such topics as limits of liability, the carriage of goods at sea, the Jones Act, the loadline statutes, and admeasurement statutes. The principle behind the first part of the codification was to make no substantive change from prior law. Therefore, it was a relatively straightforward and scholarly activity. The remaining work, however, will be more extensive and more difficult for Congress because of the overlapping provisions in these laws and the highly developed case law surrounding them. I appeal to those of you in the maritime community to assist as Congress goes through this effort by making your thoughts known on what final form these laws should take. View it as an opportunity to be creative about how the laws that govern the maritime industry should be written. In that sense, your participation in the work is essential.

This review has by no means covered all the maritime provisions enacted. My purpose was to highlight some key developments for Alaska related to this conference and give you some idea of what to look for in the future.

NATIONAL MARITIME POLICY - DOES IT SERVE ALL AMERICA?

Peter Friedmann
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Washington, D.C.

Our national maritime policy has two general goals:

A) The Merchant Marine Act of 1936, the Merchant Marine Act of 1920 (the Jones Act), and the Shipping Act of 1984 state that it is national policy to support a merchant marine. This means U.S. ships to operate, U.S. yards to build the ships, and U.S. citizens to man and build the ships.

B) This in turn must be balanced by the need to serve the general economy of this country with efficient, stable, affordably priced transportation services.

So how has our domestic maritime policy evolved? We have the Jones Act to support a merchant marine, and the anti-trust laws and rate and service regulations to benefit the shippers of goods.

We learned during the debate on the Shipping Act, and in recent comments to the FMC, that shippers primarily cared not just for the cheapest transportation--but also for predictable service. They must first know the service will be there, and then that the price will be stable and predictable.

Regulation generally limits competition. Until the Motor Carrier Act, it was basically impossible to enter the industry, to begin a service, without the acquiescence of the federal government and, in effect, the acquiescence of the carriers already in the business.

Similarly, the Jones Act limits competition by limiting entry--in this case, of foreign vessels and operators. But can anyone seriously claim there is no competition in the Alaska trades? Rates now are so low, they are noncompensatory. So presently, there is the benefit of cheap transportation. But ironically, there is also presently the benefit of stable service--because while foreign-built, crewed, or owned ships are locked out of the trade, the U.S. built, crewed, and owned vessels are locked in. The

domestic operators have no alternative. If they are to stay in business, to be profitable, their only chance is in the Alaskan trade--and they will stay in because they have nowhere else to go, other than out of business.

So it is ironic that this form of regulation (the Jones Act) does serve to hold some players hostage--not the Alaska shippers, but the carriers themselves.

Should ICC and FMC regulations continue? Clearly, forum shopping and dual regulation by differing regulatory agencies should not continue. Present ICC and FMC regulations put a ceiling on profits that can be made in good years, but no floor on losses in a bad year. Is that good in the long run? Does it provide for predictable service? It allows carriers to go out of service, but not to make large profits which would make possible further capital investment to increase service.

Alaska has many special and unique characteristics, but the fact that it is a part of the United States and subject to its domestic maritime policy, and is primarily dependent on ocean shipping, is not unique. The state shares that characteristic with three other areas: Puerto Rico, Hawaii and the Virgin Islands.

It might be useful, during these days of focus on the Alaska maritime situation, to keep in mind those other parts of the United States that find themselves in similar circumstances. Alaska has some very real concerns about the Jones Act, about competition, about dependency on a U.S. flag fleet, about national maritime policy. But so do others. Let's take a look.

Hawaii - It is further from the West Coast of the continental U.S. than Alaska, and totally dependent on ocean shipping. There is no Canadian railroad, there is no Al-Can Highway. Hawaii has experienced explosive economic growth, as has Alaska.

But Hawaii does not benefit from quite the same level of competition between carriers as Alaska does. Alaska is served by several competing main carriers and numerous small carriers. No single carrier can claim dominance in serving Alaska, while in Hawaii the opposite is true. One company controls about 80 percent of the cargo movements to and from Hawaii. So not only is Hawaii exclusively dependent on water transportation, but it is primarily dependent on one company.

And yet the attitudes of Hawaii and Alaska towards the cabotage laws could not be more different. In Hawaii there is a general sense that the U.S. flag carrier is serving Hawaii's interest with stable, predictable, efficient service. By and large, Hawaii is satisfied with the status quo. In sum, Hawaiians have analyzed a similar situation and the same law, and reached a different conclusion than many in Alaska have.

Puerto Rico - Again, here is an island completely dependent on ocean shipping, with no land-based transportation alternatives. Unlike Hawaii's government, but like Alaska's, the Puerto Rican government was concerned with the impact of the Jones Act. It decided to provide an alternative to the privately-owned carriers. PRIMSA has operated now for a number of years. It is government subsidized, and is losing money. But even so, some of the same companies now serving Alaska continue to serve Puerto Rico, competing with the government-subsidized PRIMSA, and even make a profit. This might suggest to Alaskans, and others, that having the state government step in and provide a subsidized service in direct competition with private carriers doesn't necessarily lower transportation costs; that the companies now in the Alaska trade can operate more efficiently.

Virgin Islands - Unlike Alaska, when the Virgin Islands became part of the United States, its ocean transportation was being provided by foreign carriers. U.S. companies served Alaska long before statehood, but a Danish company served the Danish territory of the Virgin Islands. Initially, the Virgin Islands were made subject to the Jones Act, subject to an annual presidential waiver, which was granted each year. Eventually, the waiver was made permanent, with the president retaining the right to revoke it. Today, even though the oil being carried to and from the Virgin Islands refineries is exempt from the Jones Act, only 8 percent to 12 percent of that oil moves on foreign ships; the remainder moves on U.S.-flag vessels. The point is, the Virgin Islands are free to use foreign ships for all cargo movements, but they choose not to.

The point is:

Alaska is not alone--

- Not alone in being primarily dependent on ocean shipping and subject to cabotage laws.

- Not alone in recognizing that its situation, and the situation of those in the same predicament--Puerto Rico, the Virgin Islands, and Hawaii--is deserving of special attention and treatment.

And so over the years, exemptions, exceptions and waivers have been enacted and made part of our national maritime policy to achieve a balance between the need for a strong merchant marine and a low-cost domestic transportation system. These include:

- Exceptions for cargo moving on Canadian rail and on the Great Lakes, and to Alaska (the 3rd proviso).

- Exceptions for cargo entering on the Yukon River (the 4th proviso).

- Waivers to allow tankers built with construction subsidies to participate in the domestic oil trade.

- A formula by which a carrier receiving operating differential subsidy may serve the Hawaiian Jones Act trade.

- An exception to Coast Guard fishing vessel manning and licensing requirements.

- A conditional waiver of the Jones Act for passenger carriage to Puerto Rico.

- Availability of Capital Construction Fund financing for ships in the Alaska, Hawaii, Puerto Rico trades, but not in the coastline trades.

- Waiver of the Jones Act for individual ships, including cruise ships now in Hawaii, an Alaska ferry, and other vessels.

In sum:

1. Our domestic maritime policy strives to strike a balance between the need for a strong U.S. merchant marine and shipbuilding base and the need for efficient, low-cost transportation services.

2. Carriers participating in the Jones Act trades must be efficient and competitive, for they have no alternative trades they can engage in.

3. Government-owned carriers are not an effective alternative to the private carriers.

4. We should decide whether we want continued rate regulation, and, if so, eliminate the duplication of FMC and ICC.

5. Other areas of this country are even more dependent on ocean transportation than Alaska. They enjoy less carrier competition. Alaska is not unique in this sense.

6. Congress has in the past accommodated special situations, but does so only when a compelling case can be made that the competing needs of a merchant marine on one hand and shipper services on the other are out of balance.

Workshop Summaries

VESSEL AND CARGO HANDLING TECHNOLOGY
WORKSHOP SUMMARY

Tom Dowd, Moderator
Nina Mollett, Recorder

This workshop covered a wide span of subjects, from handling containers using hot air balloons to ice operations. During the workshop, we discussed the following 16 topics related to vessel and cargo handling technology:

OPERATIONS - We discussed the use of LASH and SEABEE, barge-carrying ships, in the Alaska trade. These ships could be loaded at several locations in the Pacific Northwest, and then would transport the loaded barges to Alaska and offload them for delivery to remote sites.

BREAKBULK OPERATIONS AND TERMINAL DESIGN CONSIDERATIONS - We considered transit shed setback from the dock face and the methods used to ensure flexibility in dock and terminal design. For a small port, the pressure to put skids close to the edge of the wharf, to "protect cargo and shorten distance," must be weighed against the port's potential for expansion and possible installment of a crane in the future that would require a greater setback.

We examined the problem of standards - that the same engineering standards are used for a port that takes one container a week as for a port handling many times that. Participants suggested that standards might be looked at statewide so that we aren't forced to overbuild. Others emphasized that it is important to build for long life, for at least 100 years rather than the typical 20-25. "The extra cost of building for the future is not very great." Re-bar in docks should be epoxy coated, a better grade of concrete can be used, etc. Ancient Romans and modern Nova Scotians were given as examples of people who built docks to last.

PROJECT CARGO - Marketing, scheduling, and operational control problems connected with the movement of project cargoes (cargoes consisting of entire plants or construction projects) were discussed. James Pugh, port director in Houston, talked about the Port of Houston experience with project cargoes for the energy and petrochemical industries; and we discussed Alaska's potential as being tied to the state's development of infrastructures.

PRESLINGING OF CARGO - We talked about the use of preslung cargoes and their economic effects on the port, the carrier, and the shipper. It was stated that preslinging systems can

reduce the amount of time vessels have to be in port and can reduce labor costs. In inclement weather, preslinging systems can protect cargo longer and facilitate rapid unloading, unloading 80 tons at once rather than the normal 4 20-ton loads. Stevedoring companies, said a participant, don't do much investigation of improved technologies such as preslinging systems, partly because of labor union resistance and partly because of a lack of research funds--so it may be best to go directly to industry, which has the interest in reducing costs, for technological development.

TERMINAL CONGESTION - The problems of trucks backing up into city streets and of internal terminal congestions are shared by many ports. The need for planning of cargo flows within, into and out of a terminal area was discussed.

AUTOMATED TERMINALS - The use of computers to facilitate terminal operations has many advantages, but the changes should be made carefully. Computers can aid in documentation, gate systems, etc. The importance of communicating well with labor on this was emphasized. "The trucker that picks up a container and has to spend an hour getting out of the terminal is a great salesman against that terminal," and would appreciate a more efficient, automated system. It was pointed out that once an automated terminal for containers has been designed and built, it becomes dependent on the computer. One needs either an extra hardware system for back-up or an alternative manual bridge system. "Los Angeles is designing a system capable of going to stubby pencils in 20 minutes."

FLOATING DOCKS, THEIR USE AND TECHNOLOGY - The feasibility of floating docks, their uses and potential in Alaska, and the use of "temporary" floating docks and dock structures was another topic of discussion. We talked about the used market for floating wharves, and the fact that rehabilitation costs on present wharves can sometimes bring the price to as high as buying new.

ACQUISITION OF RAILCARS BY PORTS - Art Yoshioka of the Port of Seattle gave an explanation of a project under consideration by the Port of Seattle to buy or lease railcars to transport containers.

VALDEZ EXPERIENCE - John Robertson, port director at Valdez, gave a briefing on the construction of the general cargo port facility and its present and potential utilization. He said that Valdez has proven it can compete with bigger ports and can handle traffic flow. The new facility is "not on top of the town," has plenty of space using the pipeline yards, has a floating dock which is the "best state-of-the-art equipment in the area," and many other advantages. He said that Valdez needs to go after business aggressively and find a niche in the market, that the problem in the beginning was the lack of

marketing effort and the assumption that a fine new port would attract business more or less automatically.

SEA-LAND PLANNING - A briefing was given by Tom Legas on Sea-Land's plans for new ships and facilities to serve the Alaska trade. These include three new ships and a third crane for the Port of Anchorage.

HOVERCRAFT TECHNOLOGY - We discussed the use of hovercraft in Alaska in the past, and the potential for their use in the future. Alaska State Department of Transportation researcher Larry Sweet said that hovercraft are used over northern ice (this took a waiver of parts of the Jones Act), that two were used in construction of the Yukon River Bridge, and that someone is building and promoting hovercraft in Anchorage--but that the problem is one of scale.

Asked about other DOT/PF research, he said that most funding has been for highway rather than port research, but that applicable research has been done on energy, jetfoils in Southeast Alaska, corrosion, and air cushion vehicles.

MILITARY CARGO CONSIDERATIONS IN ALASKA - The present impact of military cargo and the strategic considerations used to determine the future growth of such cargo were described.

USE OF MILITARY PORT/MARINE TRANSPORT TECHNOLOGY - An overview of some of the technology that might have immediate or future applications in Alaska was provided.

ALTERNATIVES TO STANDARD DOCKS - We surveyed the use of cargo loading/unloading areas, the carriage of liquid bulk in bladder tows, and developments in "over the beach" delivery systems.

LABOR UNIONS AND THEIR ROLE - We discussed the key role labor plays in technology development, operational efficiency, and marketing efforts at ports. Several speakers said it is better to ask longshoremen's, pilots' and truckers' opinions about changes that will affect them--often their advice is excellent because they know what the day-to-day problems are and may have good solutions; and if they are consulted and kept informed they have a stake in the outcome. Plans for new technology need to be introduced and advantages pointed out to labor unions and workers early, before they become set against the changes. Jim Pugh gave the example of a bag handling operation in Houston which would reduce some workers' hours but would also create 60 full-time jobs. "Labor people aren't dummies, they have competent management-type people running things. The days are gone in longshore unions of them looking at any way they can of keeping the maximum number of people on the payroll. If port authorities go to sophisticated machinery, it may be to the port authorities' advan-

tage to fund training, to reduce the expense of the learning curve later."

ICE OPERATION - The use of ice breakers, ice-strengthened bow ships, submarine cargo carriers, and hovercraft in ice conditions was examined. Larry Sweet explained that the technology for using ice-breaking vessels exists; Finland has 50 ice-breakers, the Soviets have over 100, and the Coast Guard in Alaska has two, the Polar Sea and the Polar Star. A Great Lakes research project identified suitable technology for keeping the Great Lakes open all year, but was concluded at the start of the recession; there was then no funding to build ice-breaking ships. Environmental problems were discussed. James Coburn of Arctec Alaska said, "Ice is a road and if you break up the ice you break up the road." The fact that military submarines go routinely under the ice was brought up, which led to a discussion of schemes for submarine tankers, attractive because they would go under the ice rather than having to break it. We talked about the Arcamedian screw tractor and barge which is amphibious and fairly small, can crawl on ice or break thin ice. Participants stressed that much subarctic ice conditions technology is already available.

The discussion was animated and lengthy. The success of the workshop was due to the willingness of the participants to share their expertise and experience with each other.

TARIFFS AND RATE STRUCTURE
WORKSHOP SUMMARY

John Ball, Moderator
Shirley VanDermyden, Recorder

The workshop discussed various aspects of the rate structure. Participants confirmed that over-tonnage exists. While rates are being forced lower, over-tonnage will have an impact upon carriers and an impact on who will survive in some markets.

Barge operators especially are facing a declining revenue picture, with rates to Southcentral Alaska falling by as much as 50 percent. However, many Southeast Alaska communities are NOT seeing these rates. This is true for a variety of reasons, but primarily because they are not high-volume markets.

If smaller Alaskan communities are to be served by elements of the maritime industry, infrastructural improvements and facility investments will be required at the local level, perhaps with state support. At the same time, ports are concerned about the price of these new investments, especially in a climate of apparent competitive pricing between neighboring ports.

A significant factor in port viability and in the provision of marine transportation services is the availability and scope of backhaul. In fact, quite different strategies might suggest themselves for state and local governments, depending upon whether they have small volumes in-bound with no backhaul, whether they are dependent upon varying commodities such as fish or wood products, or whether they are ports with hinterland access serving sizable populations.

Largely because of the change towards processing at sea, the growing bottomfish industry may not give the large boost to ports and employment that is hoped for.

Technological changes, especially in the intermodal systems, are having a large impact on rates generally. These changes will also influence the flow of freight, especially among the Southcentral Alaskan ports. These same changes in ports in the Lower 48 and their responses will have a corresponding impact upon the position and character of their operations.

It was recognized at the workshop that the Port of Valdez, for instance, has been interested in long-run investments and opportunities in this area, including a Foreign Trade Zone.

The rates charged by ports got some attention by the workshop. While the tendency is to try to adjust rates to match those of competitors, realistically these charges are only a small fraction of the total transportation costs.

In addition, ports were advised to concentrate on the rates and commodities where the rates really are keys in holding or loosing business. And they were advised to develop an accounting system that will give them the information they need to actually know their costs and to know how close their rates are to meeting costs and expected rates of return.

It was suggested that Alaskan ports examine the role and potential of a working group similar to the Northwest Terminal Operators Association.

Tariffs and Rate Structures Workshop Attendees

Bill Adam
Ogden Beeman
Hermann Bernhardt
John Bradbury
Bette Cato
Glen Chambers
Doug Edison
Doug Ensley
Peter Finnerty
Nancy Gross
Stan Hajenga
Steve Hansen
Jube Howe
Bob Leonard
Daniel Malick
Corky McCorkle
Bill McKinney
Jarvis Neans
Howard Norseth
Michael O'Hara
Reggie Short

RURAL SERVICES
WORKSHOP SUMMARY

Gary Daily, Moderator
Grant Sims, Recorder

Noting that 90 percent of the goods that support rural Alaskan lifestyles are moved by water, Homer port director and workshop chairman Gary Daily opened the session by defining rural ports as those which service communities which have no alternate access such as highways or airports. Many ports which thus qualify as rural, he said, are those with limited governmental and financial structuring and thus have difficulty coping with port management and financing. State Department of Transportation and Public Facilities (DOT/PF) representatives noted that Alaska is in the process of developing a port system plan, and that this workshop and others like it serve the purpose of collecting feedback that aids the process of plan development. DOT/PF spokespersons also noted that as long as money is plentiful, port developments throughout the state can proceed without being backed into critical corners. They added, however, that the situation could change if revenue declines. Several speakers said that while they feel that development of a port management plan is good, the state should not become involved in any maritime subsidies except in cases of extreme--or even catastrophic--need. Development, they said, should be left to free enterprise, in which "the decision regarding whether to serve or not serve any community is based on sound economic principles." Barge line spokesmen expressed the opinion that Alaskan communities are being adequately served and that communities with as few as 20 or 30 people are able to support periodic barge service.

Port-related rural service problems discussed by the 33 workshop participants included 1) environmental and engineering problems, 2) port development, 3) marketing, 4) port administration, and 5) funding sources.

Environmental and Engineering Problems

Port development in rural areas is hampered by many engineering and environmental constraints. Such constraints include ice, water depth, heavy silt loads, shoaling, dredging costs, strong currents, high tide ranges, navigational hazards, high winds, high seas, limited waterfront availability, lack of berthing room,

lack of uplands for storage and support services, short shipping seasons, underdesigned facilities, and a lack of qualified port personnel.

Discussion of engineering and environmental constraints was limited to a listing of them, with speakers noting that the port sites with the most problems usually are those least able to deal with the problems administratively or financially. On the other hand, the best port sites (those with the fewest engineering and environmental problems) usually feature economically healthy communities.

Port Development

Most Alaskan ports are in remote locations without overland connections. These isolated communities are generally small and lack a formal administrative structure, making it difficult to secure funds for new facilities or to maintain local control of facilities once they are in place.

Several speakers felt that development of all ports, remote or otherwise, should be left to the "sound economic principles" of free enterprise. The fact that a community exists at a bad spot, they said, is no reason to spend taxpayers' money overcoming extreme engineering problems in order to make a good port. If good port facilities are warranted financially, free enterprise will provide them. It is a losing proposition for the state to provide facilities to communities that cannot provide an economic return on the investment. Communities which claim to be inadequately served, according to these speakers, have no basis for the claim. "If people elect to live at a remote location," said participant Chris Gates, "they cannot expect the taxpayer to send all of civilization's amenities out to them. If they want the amenities, they can simply move to a community which pays free enterprise to provide them."

Several commercial barge operators present said they felt that Alaskan communities are being adequately served. Communities with as few as 20 or 30 people are able to support periodic barge service, they said. Whenever such service is warranted, the service and facilities are provided. Government construction of port facilities at communities which do not warrant them on economic grounds would not result in an increase of services.

Some workshop participants felt that subsidies should not be dismissed out of hand in all cases, particularly if state-subsidized facilities stimulate development of a resource. Bering Sea Fisherman's Association spokesman Bill Wason, for instance, was on hand to plug rural cold storage development in the form of state-subsidized installments to facilitate fish handling in Western Alaska. Such subsidies, he said, would stimulate further development of commercial fisheries and would increase the value of fisheries products by providing the means to maintain consistent product quality. This type of subsidy, he said, would facilitate the ongoing transitions in Western Alaska from subsistence economies to cash economies.

Other participants pointed out, however, that such subsidies can broach extremely complex and controversial territory. How far could port management go, for instance, in promoting development of mineral resources, when such development would intrude on fish spawning habitat?

Marketing

Some workshop participants said that while it might be true that the state should not subsidize construction of port facilities, there are other areas in which both state agencies and private enterprise can stimulate port development. A vigorous commodity marketing program, for instance, could stimulate substantial port development, they said; yet the state has no such program. Development of a statewide bottomfish industry also would be a boon to rural port development; yet, while such development has been pushed by state officials, there remains a lack of economic incentives for private industry. Cooperative efforts between public and private sectors in those and other areas could stimulate more development, to mutual benefit.

Not only is the state of Alaska lax in its marketing efforts, according to some workshop participants; it is also slow to react to market fluctuations. As a result, they said, Alaska is not in the competitive mainstream when it comes to reacting quickly to changes in world markets. Mineral development and its related infrastructure was cited as an example; one speaker noted that while recent development of a coal port at Seward demonstrated that the state can act quickly in response to pressing need,

Alaska's port development continues in most cases to lag behind market demands.

Port Administration

Workshop participants agreed that many Alaskan ports do warrant development of better port facilities. While some argued that the development should be a matter of free enterprise, there seemed to be a consensus of opinion that port administration in Alaska needs upgrading.

State Department of Transportation and Public Facilities spokesman Dan Malick said that the state is in the midst of developing a port management plan. Malick ventured no predictions regarding what form the plan will take or when it will be implemented, except to say that DOT/PF is "perhaps halfway" through a process that began in 1982. Workshops such as this one, he said, "serve the best purpose of collecting feedback to help forward the process."

Workshop participants from various Alaskan port communities noted that in the absence of a state management plan their hands are tied, because state law prohibits formation of special purpose government bodies such as port authorities. The fact that there are no port authorities in Alaska, they said, results in a lack of administrative bodies with specific jurisdiction over port development. That lack, in turn, results in an atmosphere in which qualified port management personnel are not attracted to Alaska. "People with excellent management qualifications," said Daily, "are not likely to apply for a job in which no management structure exists."

Most participants agreed that the state needs to have in place as soon as possible a functional system with which to plan and set priorities for port facilities in Alaska.

Port Facility Funding

Alaska has been operating since 1981 on a concept by which the governor's office, the Alaska State House and the Alaska Senate each control a third of the fund appropriations for capital projects. Workshop participants felt that any future port management plan could not be logically administered under such a system. The Department of Transportation might have the experts, but does not have sufficient control under such a system, they said, noting that special interest groups could--and already do--circumvent DOT/PF by going directly to the governor's office or the legislature for money.

As a result, some communities are experiencing overbuilding and facility duplication, while others remain under-equipped.

Spokesperson Kay Schmidt said DOT/PF is working toward a management plan that will eliminate such problems. She said that for the time being--as long as money is plentiful--port developments throughout the state can proceed without being backed into critical corners. But the situation could change if revenue declines, she said. She advised rural communities to wait for implementation of a competent management plan rather than be tempted to incorporate "short-term solutions that will not yield long-term benefits."

Rural Services Workshop Attendees

Joe Camp
Rhonda Cargill
Frank Carson
Gary Daily
Carol DeVleeschouwer
Doug Ensley
John Feero
Jim Ferguson
Michael Flynn
Peter Friedmann
Chris Gates
Lois Kramer
Lyle Larson
Dick Levine
Elliot Lipson
Corky McCorkle
Daniel Malick
Kerry Martin
Jay May
Mark Mayo
Tom Middendorf
Michael Noonan
Michael O'Hara
William O'Shea
Michael Paris
Robert Pawlowski
Jack Roderick
Marc Rudd
Kay Schmidt
Grant Sims
Duncan Smith
Robin Smith
Larry Sweet
Justin Swift
Bill Wason
Jonathan Widdis

PORT DEVELOPMENT
WORKSHOP SUMMARY

Tyler Jones, Moderator
Nina Mollett, Recorder

The issues addressed during the port development workshop included planning for long-range port efficiency; finance issues, such as private versus public finance; grants funding and state policy on funding of ports; and control of the destiny of the port industry in Alaska. The control-of-destiny issue attracted the most attention and conversation in the course of the workshop. A major question asked was what role the port industry sees the Department of Transportation and Public Facilities playing at present and, ideally, how big a role the department should play.

An adjunct question revolved around whether the state was entitled to control of the port industry, since it was so deeply involved on a financial level. It was observed that DOT/PF is not in control of the state's port system in all respects, particularly in so far as different communities achieve state funding of port projects in different ways, and that consequently what might be proposed by the department might be very slow being developed and built, whereas a community employing private lobbyists might find itself with full funding in a matter of very few months.

A question arose concerning the formation of a port organization or an organization of port decision makers. The lack of a specialized group, separate from the Harbormasters and Port Administrators Association, was noted. One of the program participants said that the autonomous port authority which is the standard Lower 48 model is essentially prohibited in Alaska and it was further suggested that without autonomy, a port association would be a fairly meaningless entity. Those involved in the workshop who were visitors from outside Alaska expressed a great deal of surprise that no formal organization of port interests had been formed within Alaska. Attention was drawn to the necessity of port policy makers forming an organization, as opposed to the implementers of port policy forming an organization. A common voice of port interests in Alaska was seen as being particularly important in Juneau, so that the legislature and DOT/PF would be able

to obtain expert information, testimony, and advocacy for port development.

The experience in Washington State with the Washington Public Ports Association Cooperative Review Committee was discussed in some detail. It was observed that the Cooperative Review Committee was formed in response to suggestions that a Puget Sound port authority was necessary, and the committee came into being in order to prove that the organization of ports was not just involved in a cutthroat competition mode but was actually making rational decisions relative to necessary services that were being provided.

The desirable functions of an advocacy group were addressed, including technical review of port development proposals, the development of objective information on the different ports within the area, and the role of marketing at different ports. The potential for such an organization to make better joint planning possible by the private and public sectors was seen as a particularly exciting prospect. From a financial standpoint, knowing that projects were going to go through a public, or relatively public, review was seen as being an alternative to the present reactive planning mode that most ports find themselves in.

It was observed that the maritime administration presently publishes the port economic impact study packet, which permits even small ports to evaluate the economic impact of their port on their community. It was suggested that the organizers of the workshop could obtain copies of the packet and distribute them among the conference attendants. (Please note that the maritime administration's port economic impact study packet is out of print, it is being reprinted, and once it is reprinted the maritime administration will be sending copies to Tyler Jones, port director in Anchorage, who will distribute them among the ports represented at the conference.)

Distinctions between strategic and transitional planning and project planning were raised, particularly in the context of the proposed port organization for Alaska. The emergence of the private corporation in concert or joint development with the public port was discussed. Attention was drawn to the private sector's need for public support and the public sector's requirement in many instances for private capital. Parenthetical comments were offered by one of the panelists, who said that a strategic plan

shouldn't be more than a single page. A second participant observed that a master plan should be a drawing, not words.

The recent changes in the availability of funds, not just in Alaska but elsewhere, means that new port projects are being bought off by larger corporations as opposed to public ports. That point was emphasized in a recitation of the experience in Dutch Harbor, where both the public sector and the private sector built competitive facilities and now both are underutilized.

Following a break, the workshop participants listed the pros and cons of formation of a state port organization. The pros were listed as follows: a commonality of issues, technology transfer, networking, communication, community education, opportunity to represent regional port interests, enhancement of the marketing of all ports in Alaska, data and background information, accumulation, legislative involvement, regulatory involvement, mobilizing forces to address political and regulatory issues, a central port organization for port services, an organized forum to reach the port industry, exposure for port staff and commissioners, interface with the private sector, developing trade missions, developing a knowledge base for legislators, creating stability in public port policy, continuity, public education and information. The cons were identified as the difficulty of limiting the scope of issues, the burden of organizing in terms of time and expense, the likelihood of the larger ports providing the majority of support, and the bureaucracy of such an organization. The representative of DOT/PF who was present was asked how positive the department would be toward a port organization. It was observed that officially the issue had never been addressed but that DOT/PF sought and would support such an organization, and sought a list of the constituency.

It was clearly the consensus of the port development workshop that an organization is needed. It was apparent that no major changes to state law or the constitution were necessary to achieve such an organization; it was simply a matter of identifying and gathering the appropriate individuals involved in port policy making to establish such an entity. The Port of Anchorage volunteered to consult with the Alaska Municipal League to arrange for information to be distributed on the formation of a port policy-makers organization.

Port Development Workshop
Attendees

John Ball
Ogden Beeman
Steve Bingham
Jack Brown
Frank Carson
Tom Dowd
Douglas Edison
Doug Ensley
James Ferguson
Michael Flynn
Nancy Gross
Stan Hajenga
Ray Hansen
Jube Howe
Jim Jackson
Ginger Johnson
Tyler Jones
Ron Kahlenbeck
Lois Kramer
Lt. Col. Bill Lane
Lyle W. Larson
Tom Legas
Elliot Lipson
Corky McCorkle
James May
Mark Mayo
Marianne Molchan-Douthit
Nina Mollett
Howard Norseth
Michael O'Hara
Howard E. Olson
Michael Paris
Ed Pawelek
John Pullen
Jim Pugh
John Robertson
Marc Rudd
Al Sawyer
Paul Seguin
Tony Watson

JONES ACT AND RELATED LAWS
WORKSHOP SUMMARY

John Ball, Moderator
Shirley VanDermyden, Recorder

Alaska, through its dependence upon domestic shipping, supports a significant portion of the "Jones Act" fleet. It is recognized that this places a large financial burden upon the state in extra costs over what would be required if the situation were different.

These costs, estimated in the range of $200-$300 million, arise out of the national interest in maintaining the U.S. Merchant Marine and our shipbuilding capabilities in the event of war. The allied interests of labor, equipment suppliers and others contribute to making up an important support group for a number of provisions of the Jones Act. However, since such a large portion of the burden of this national interest falls on Alaska, we are very interested in finding relief. For some, relief is spelled "REPEAL." However, it was suggested during the workshop that there are some alternatives that would do less damage to the existing structure and yet move this burden elsewhere.

Alaska already does benefit from the 3rd proviso that enables domestic freight to be carried by foreign carriers if it first is carried by Canadian railroads and subsequently by sea to Alaska. Proposed changes at the federal level include provisions to allow foreign-built vessels into the cruise ship business. This is seen as a boon to the Southeast economy.

Other major topics discussed at the workshop included: the competitive ability of U.S. shipyards as regards the construction of different sizes of vessels and care and maintenance of ships; changes in the provision of workman's compensation to maritime workers; changes in Limits of Liability, and other complexities in the regulations that influence how ships may be built or operated to meet the letter of the law.

A more detailed rundown of the workshop follows:

- Ogden Beeman, Portland, explained that "dockage and wharfage" are obsolete concepts, "intermodalism renders that so because the intermodal carrier pays for the entire movement from origin to destination." (Thus "cargo" fees are no different than carrier fees.)

- He also noted that over-tonnaging in the Alaska trade is driving rates down because of competition.

- Workshop leaders asked the group to assume that short term is five years and long term is 10 years plus.

- A Kodiak participant noted that intense competition exists all over "like never before," with many new barge competitors.

- A spokesperson from Ketchikan mentioned that better port facilities are needed there to serve cruise ships.

- Doug Edison, Olympia, said that if carriers are not the "bad guys" of the Jones Act, that fact needs to be publicized so that public attention will focus on retailing.

- A participant noted that there is sometimes considerable empty space on barges.

- A Sealaska representative noted that low overhead for a barge carrier is an advantage during periods of overcapacity.

- A Port of Kodiak speaker said that if ports want service, then they must provide adequate facilities. It was noted that the Port of Olympia, Washington, is studying plans for a new carrier competitor to enter the Alaska trade. It was brought up that there is great pressure on financial capital for all interests, public and private.

- Bette Cato said that the Port of Valdez used to be the gateway to Interior Alaska. The new dock at Valdez is intended to recapture that business. The floating dock is an "engineer's mistake" that turned out great for its new use.

- Double trailer rigs and diesel tractors make it very feasible to compete with rail economics, a participant mentioned.

- Nancy Gross, Unalaska, noted that foreign-caught, non-processed fish cannot be landed in the United States. Ocean-processed fish cost one-half as much as shore-processed fish. It was noted that the no-landing rule is to protect U.S. fishermen.

- Star Fishery in San Diego is closing. Tuna will instead come from American Samod.

- Some interests present said that they would like to see shipper contracts be revised from "by container" to "cwt." It was noted that Fred Tolan had said in his previous remarks that small shippers will come under THIRD PARTY contracts to get the benefit of lower rates. It was mentioned that a carrier can consolidate and become the "third party."

- Port of Kodiak speaker mentioned the need for refrigeration capacity and that Sea-Land and APL have reefer vans.

- A speaker noted that Port of Olympia has an old cold storage building at its dock.

- The market is overseas. What is Alaska's goal? Does it seek fishing, or processing or both? Both may not be possible.

- American boats can be very productive in joint ventures. "High line draggers" caught more fish than the entire west coast Canadian fleet.

- Reggie Short of Norfolk & Southern brought up the growing support for the the new rail technology of "double-stack" railcars moving containers. He explained that a major shipping agent had recently signed a contract with two western railroads to purchase and operate double-stack trains to transport domestic cargoes in containers.

- It was noted that the discussion was intended to discuss the Jones Act and related laws, the latter being laws that relate to equity, taxation and economic regulation of Jones Act trades: Title 46 USC 289 (passengers) and 883 (merchandise).

- It was mentioned that a "national task force" to address the impact of the Jones Act had met at Sacramento and Boston and that a four-day meeting would be convened in Hawaii.

- Customs is said to be considering a loosening of its rules relating to U.S. port calls by foreign-flag passenger ships.

- It was explained that the Construction-Differential Subsidy only applies to foreign commerce and has not been funded since the Reagan Administration took office. It was noted that the Jones Act is really protecting shipyards and their suppliers.

- Peter Finnerty, Sea-Land, explained that U.S.-flag carriers are in the same position as other industries in the U.S. economy. They are U.S. companies, complying with U.S. laws on taxation, employment, labor, S.E.C., etc. The U.S.-flag requirement is the same for airlines, trucking companies and railroads. The difference is the U.S.-built requirement, which helps U.S. ship-builders and component steel suppliers. He said that significant reductions in the expense of the U.S.-built requirement could be achieved by elimination of "Buy America" requirements in MarAd CCF and Title XI regulations. Added tax incentives could also relieve the cost burden of domestic trade users. The answer to the cost problem is REFORM, NOT REPEAL of the Jones Act.

- The group discussed deep-sea trawlers, smaller offshore craft where U.S. yards are competitive. It was mentioned that there is a continuing debate about the 3rd proviso of the Jones Act. Vessels in the Alaska trade constitute 30 percent of the Jones Act fleet.

- Coast Guard manning was discussed.

- A discussion ensued regarding efforts to export Alaskan oil to Japan. Consumer groups are in favor. U.S. shipyards, maritime labor, the Treasury Department and small U.S. tanker operators are opposed.

- U.S. restrictions against CDS-built supertankers entering the domestic trade were discussed. (90,000 dwt and above)

- Exclusion of foreign vessels from the U.S. fishing fleet was noted.

Jones Act Workshop
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Joe Camp
Rhonda Cargill
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