

H B

7 6 8 8







HD768

# Alaska State Legislature

## House of Representatives



Rep. Bette Cato, Chairman

Committee on Transportation

Pouch V  
State Capitol  
Juneau, Alaska 99811  
(907) 465-4858

### MEMORANDUM

TO: Rep. Eric Sutcliffe  
FROM: House Transportation Committee Staff  
RE: Portion of committee meeting transcript - March 18, 1982  
DATE: March 18, 1982

Per your request, the following is a transcript of Mr. Bob Stiles' testimony before the House Transportation Committee this morning.

Bob Stiles, Manager of Diamond Shamrock, Tuwitna Joint Venture, Beluga Fields.:

I'd like to make an opening comment...As West mentioned, I have spent considerable time in what we believe to be our market area over the last three or four months and have personally talked to what we'd like to think is every potential customer in the utility business in that area and if we had a port facility in there today we wouldn't have sold a pound of coal.

The biggest deterrent in the development of those particular resources at this point in time is something we've got to deal with in Mother Nature and that's 4500 kilocalorie coal and the market is buying 6,000. So we're 25% below in heating value in what the market's looking for.

The..a port facility now or next year, at least as far as the Beluga reserve are concerned, wouldn't make an iota of difference in terms of whether or not that those projects would go forward. The biggest problem that has to be solved in order to develop those resources is to get those particular customers convinced that they can utilize their coal in the same way that we are currently utilizing it in the United States.

The Pacific Rim Basin, and that's the danger in trying to compare tons out of Canada, Africa, Australia and China with tons out of Alaska, is you're talking about different kinds of coal. So that's the kind of problem that has to be overcome in the market place; and I think that, as far as my company is concerned, and I speak specifically to our development in Beluga field, that if it's not economic for us to develop a port facility so that the coal itself carries that cost, then there's no reason to suspect that it's going to be economic for the state to do that.

Rep. Metcalfe: Do you have an estimate of the cost....

3 parties - Diamond Shamrock B.H.W.  
right & mine Subs - lease of 20,000 acres  
placer cones -  
→ include - - 35,000 ?

next year to 1990's  
87 to 92 time frame -

drop in ~~total~~ <sup>local</sup> growth demand -  
~~.9% drop in~~  
.9% drop in H.D.P.

Window - 4 yrs before power plant comes on line  
|| then - BTK -

evaluation not restrained ~~by~~ <sup>by absence of</sup>  
infrastructure -

~~Ernst~~  
Mitchell  
~~R~~  
~~Leitch~~  
Leitch  
Mitchell -

% of mix only effective source of sub. bottom  
Coal - and its in Alaska -  
cheaper on per - ~~ton~~ ton basis  
it is competitive - on BTK's  
Marine transportation distance -  
taps

mining licence  
do not currently expect a need for state  
infrastructure it can carry on its own  
interested in low interest loans -  
situations where it would make sense  
for state to get involved,

Coal industry not looking for a subsidy -

- Phil Haldsworth -

- concern with coal field -

↳  
West Boettger

↳ cost of facilities cannot be tied to one mineral & still be competitive.

market - demand driven to export.

other countries have infrastructure must be done on a planned basis

planning phase then come out with S.D. Bonds.

Commit give time frame (but in a bright future)

geographical location of state.

Beluga 82 to 88 <sup>how</sup> BTU.

↳ pay their share of the use.

↳ length of study 12 & 18 mos. \$200 then \$500.

↳ ↓ who are the users → other uses than coal

↳ tax - revenue — look at Montana —

↳ total U.S. export must cost 17 mil —

↳ private enterprise should

need to get into (window should not be lost)

Staff Comment

We read a good book look forward to Coal (more than a special on thing to legislative) made up of industry and policy people to study the and make specific recommendations and study the issues in detail.

"What is needed for public service is strong nerves, backbone, the instinct for combat, the hide of a rhinoceros and the willingness to work like a dog for an occasional rain-washed bone."

Governor Robert Bradford of Massachusetts set down these attributes for a successful politician:

"To live long in politics, you must possess the hide of a rhinoceros, the memory of an elephant, the persistence of a beaver, the native friendliness of a mongrel pup. You need the heart of a lion and the stomach of an ostrich. And it helps to have the humor and ubiquity of the crow. But all of these combined are not enough unless, when it comes to matters of principle, you also have the stubbornness of an army mule."

He who exercises government by means of his virtue may be compared to the North polar star, which keeps its place and all the stars turn towards it.

Simondes  
556-468 B.C.

# Alaska State Legislature

## House of Representatives



Rep. Bette Cato, Chairman

Committee on Transportation

Pouch V  
State Capitol  
Juneau, Alaska 99811  
(907) 465-4858

### COMMITTEE SCHEDULE

March 8 - March 12, 1982  
8:30 a.m. - Capitol 112

Monday	March 8 Committee Work Session.
Tuesday	March 9 No scheduled committee meeting.
Wednesday	March 10 Meeting with Yukon Territorial Officials concerning issues related to railroads, highways, and other transportation systems.  ** SJR 67 - (Transportation Committee) Relating to the exemption of the Alaska Railroad from federal employment ceilings and work force reductions.
Thursday	March 11 ** HB 635 (Fanning) "An Act relating to the operation of implements of husbandry upon the highway."  ** HB 804 (Cato) "An Act making a special appropriation for payment as a grant to the City of Cordova for a feasibility study of the Bering River coal field port and transportation system; and providing for an effective date."
Friday	March 12 No scheduled committee meeting.

Coal Hill  
ENERGY

# The Coal-Export

Competitors are investing  
in shipping facilities  
as if the demand were unlimited.

by DAVID FAIRBANK WHITE

The forecast is stunning: by the year 2000, most experts agree, U.S. shipments of coal abroad will exceed today's colossal exports of grain. Demand has already grown so strong that a frustrated armada of colliers was kept at anchor off Hampton Roads, Virginia, this year, waiting months to load coal for Europe and Asia. Hoping to prosper from the coming trade, U.S. ports are launching their fastest and most dramatic expansion of export capacity ever. Total investment in new coal terminals could reach \$4 billion as the ports make changes unparalleled since the container revolution lifted the face of waterfronts.

Coal fever has hit the coasts with such a gallop, in fact, that what was once a critical shortage of loading complexes now shows all the signs of becoming a glut. Across the country, 45 new terminals are being built or planned at 29 harbors on three coasts; if they are all completed, U.S. coal-loading capacity will top 625 million tons per year. This vastly exceeds even the Department of Energy's bullish projections that 250 million tons will be shipped overseas annually by the turn of the century—a 342% increase over today's level. (These export projections and figures on terminal capacity exclude the Canadian trade; Canada will buy some 15 million tons of U.S. coal this year and isn't expected to increase imports much.)

"I'm assuming somebody in these businesses has been doing some market stud-

ies and knows what he's doing," says Baltimore's port administrator, W. Gregory Halpin. As aggressive a port developer as any in the nation, Halpin is himself hardly immune to coal fever. Baltimore has 14 million tons of export-terminal capacity and is building 22 million more. "I have only one comment," says Halpin in his modern office high above the harbor crescent. "Ship it through Baltimore."

## Grow or die

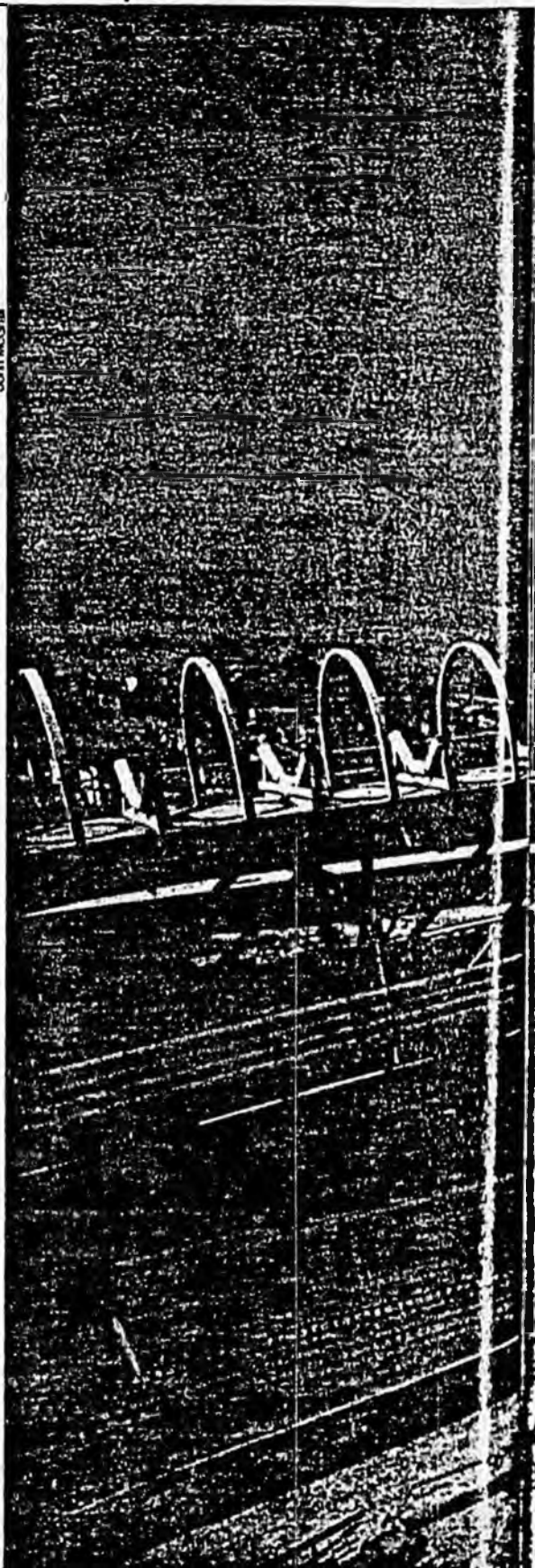
Many proposed terminals will probably never be built, and some on the Mississippi may earn their basic income on domestic traffic. (About 740 million tons of coal will be consumed in the U.S. this year.) But the temptation to overbuild seems irresistible. Coal companies, railroads, barge lines, terminal builders, and local governments all want to profit from the export business.

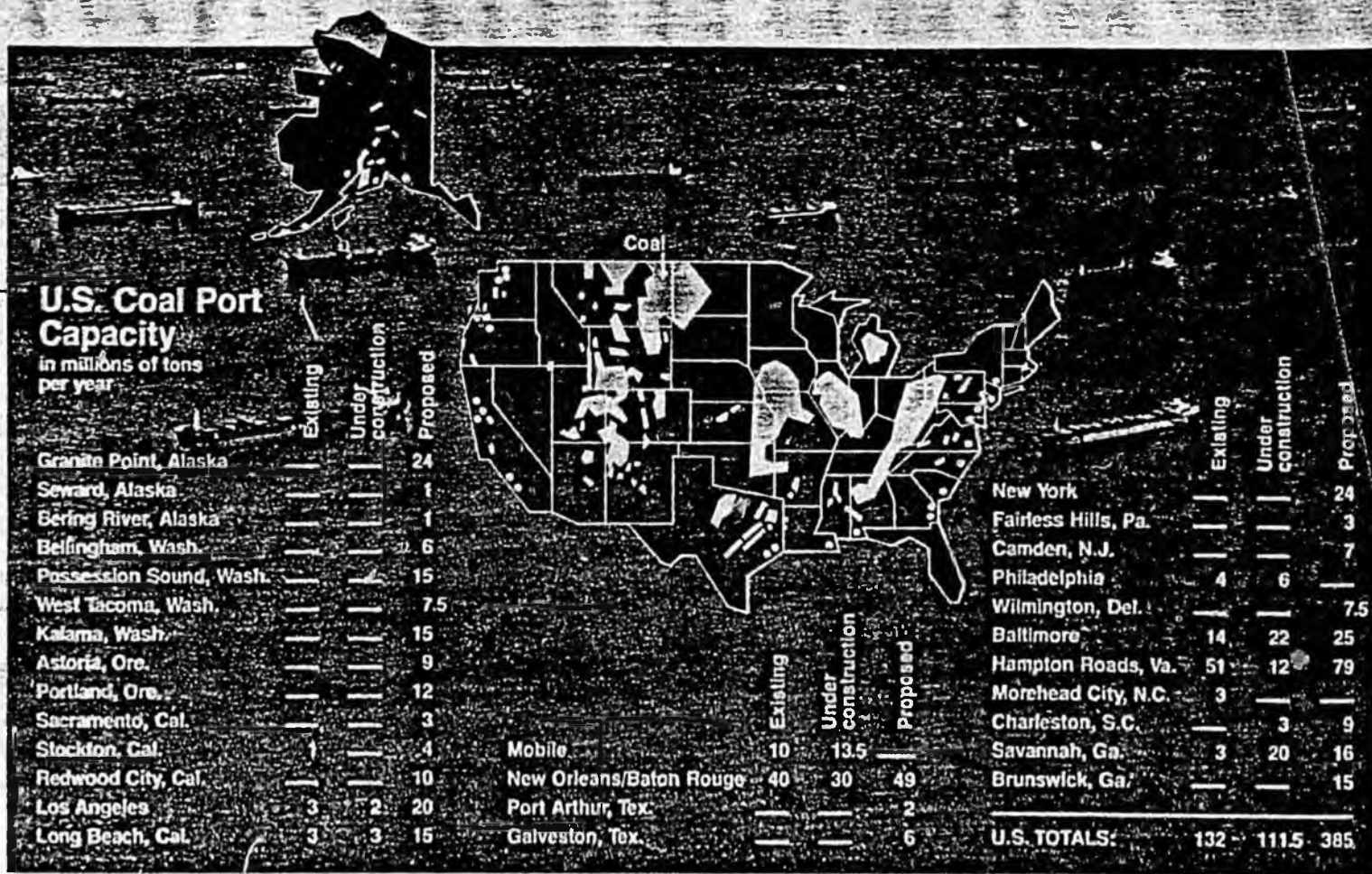
Each entity has its own special stake in the outcome. For the authorities that run the harbors, coal shipments mean jobs, income for local businesses, tax revenues. For big coal companies, terminals ensure that their product can move. For railroads and barge lines, the race is to protect their traditional livelihoods and to expand their markets. Each competitor is driven by the desire to grow and the fear of dying.

Entering the business for the first time, the Virginia Port Authority, a government body, will put up 25 million tons of capaci-

Occidental Petroleum expects to export 12 million tons of coal a year from this terminal going up in Baltimore. The elevated conveyor will feed coal from hopper cars into the stacking tubes. As coal rises in the tubes, it will spill out the windows into mounds. Conveyors under the holes in the ground will carry it to the loading pier.

John McNeal





## Coal Fever on the Coasts

This FORTUNE survey of ports (orange dots) marks the battlefields in the coming war for coal-export traffic. The East Coast, with 75 million tons per year of loading capacity, has long dominated coal export and is fighting to retain its lead. The principal challenge will come from terminal builders on the Gulf of Mexico, where ports are fed mainly by

inland waterways. The West Coast remains a small factor, with only seven million tons of capacity and five million under construction. If all proposed terminals are built, the U.S. will have coal-loading capacity of 628.5 million tons per year—vastly in excess of what will be needed. This survey excludes small terminals under one million tons.

same energy he would derive from 200 tons of 12,000-BTU coal.

A recent national survey of spot prices for steam coal FOB mine gives an idea of the extraordinary range in values. Wyoming and Idaho coal rated at 8,000 BTUs per pound and 1% sulfur recently sold for \$7.50 per ton. Illinois coal rated at 10,500 BTUs per pound and 3% sulfur went for \$19 per ton. Southern West Virginia and eastern Kentucky coal rated at 12,000 BTUs with a sulfur content of 1% cost \$35 per ton. The latter is a hot commodity on any pier in the country.

### Where advantage lies

Almost as important as coal grade is transportation cost from mine to port. CSX Corp.'s Chessie line and the Norfolk & Western Railway, which haul Appalachian coal to Hampton Roads, charge \$14.72 to \$15.37 per ton, depending on the distance from mine to terminal. In addition, both railroads charge for loading the coal aboard ship: 46 cents per ton at the N&W terminal and 74 cents at Chessie's. All together, it costs \$15.18 to \$16.11 to get a ton of Appalachian coal aboard ship at Hampton Roads. At Baltimore, served by the

ty at Hampton Roads, one of the biggest projects in the country. In Baltimore, Consolidation Coal, a Conoco subsidiary, has begun building a \$100-million terminal that may ultimately handle 12.5 million tons annually from mines in Pennsylvania that the company owns with West German investors. Dravo Corp. is adding 240 barges to its Dravo Mechling fleet plying the inland waterways and, in its capacity as designer and builder, is planning terminals for operators situated from Chesapeake Bay to Puget Sound. On all three coasts, wherever grumbling machinery speeds the black mineral into the holds of waiting colliers, boom times are here and gloom is hard to find.

Crucial in the contest to handle coal traf-  
Research associate: Brian Dumaine

fic is access to the right kind of coal. Hardly a homogeneous product, coal is not even predictably black; most lignites are dark brown. Coal generally falls into two categories. Metallurgical coal is used in steelmaking, and until 1979 almost all U.S. coal exports were of "met" coal. But the projected growth in European and Asian demand is for steam coal, burned mainly by utilities to generate power.

Two important properties are required of steam coal—low sulfur and high energy content. As an antipollution measure, many governments limit sulfur content, often to 1% or less. And the more energy coal produces when burned, the more valuable it is. A buyer must purchase, transport, and handle 300 tons of coal rated at 8,000 BTUs per pound to get the

continued



## Ground Storage

Chessie, export rail rates run as low as \$14, loading included, while Mobile, Alabama, another low-cost port, has transportation and loading costs as low as \$10.25.

These factors give the principal ports exporting Appalachian coal—Hampton Roads, Baltimore, and Mobile—a commanding advantage over competitors. While western coal is available in vast quantities, it has serious drawbacks as an export commodity. The Northern Great Plains deposits are low in energy content, and high-grade Rocky Mountain coal has to travel 1,000 miles, often across mountain peaks, to the nearest port. By contrast, the greatest reserves of low-sulfur, high-BTU coal in the U.S., some 18.7 billion tons, lie in the majestic Appalachian deposits, beginning far up in Pennsylvania and extending down to Alabama. The eastern railroads can carry this premium-quality coal out of the mountains on an easy downhill run to the sea. Little wonder that the ports with access to this coal are fighting to maintain their edge, while every other port in the country is striving to compete with their economics.

These economics have made Chesapeake

Bay the Persian Gulf of coal. Its waters carry over four-fifths of all coal shipped overseas from the U.S., more than the exports of any of America's chief rivals—Poland, Australia, and South Africa. Of the two coal ports on the Chesapeake, Hampton Roads is king. The *Monitor* and *Merrimack* fought the battle of the ironclads there, and coal runs as thick as history. Hampton Roads is expected to send 50 million tons abroad this year, almost two-thirds of all U.S. overseas shipments. Rolf Williams, chairman of Anders Williams & Co. and a prominent shipping agent whose livelihood comes from the vessels that call at Hampton Roads, is keenly watching the scramble for coal traffic. "We are very concerned," says Williams. "We will suffer if other ports get the business."

## The battle for traffic

The two most important defensive players at Hampton Roads are the Norfolk & Western Railway and the Chessie line, which carry virtually every pound of coal into the harbor. Both are assured of new terminal capacity, which will prepare Hampton Roads, with its tremendous nat-

ural advantages, to handle a monumental increase in traffic. The Chessie has so many parcels of land served by its tracks to the A.T. Massey Coal Co. and to Dominion Terminal Corp., a consortium of Westmoreland Coal, Armco, Ashland Coal, and Utah International; both groups will construct terminals of their own. The track of the Chessie and Norfolk & Western will feed into the 25-million-ton-per-year superterminal to be developed by the Virginia Port Authority. "If we can get this facility built," says Port Authority Executive Director J. Robert Bray, "we can put Virginia miners to work."

The proposed Port Authority terminal recently won a fierce battle for traffic with a competing proposal put forward by Parsons Brinckerhoff, an engineering and project-development firm. Pittston, Consolidation, Island Creek, and others have agreed to send their coal through the Port Authority terminal, but Parsons Brinckerhoff insists it will still try to develop a facility of its own. Thus Hampton Roads, which now has an export-loading capacity of just over 50 million tons a year, will be adding at least 55 million tons and perhaps

# Big Cargo

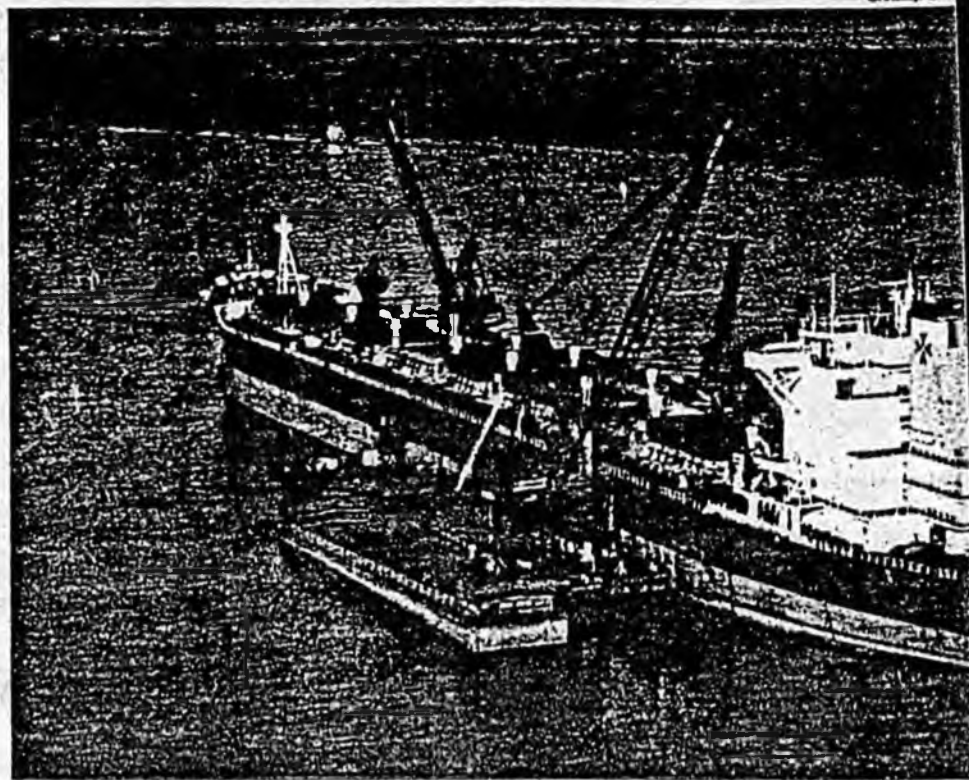
The classic method is to dump from hopper cars into a conveyor system, as at the Norfolk & Western Railway's Hampton Roads terminal (below). Storing coal by the carload helps the yard select and mix grades to order, but it ties up rolling stock. Modern ground-storage facilities like the one at International Marine Terminals near New Orleans (left) can be more efficient. Railcars or barges unload coal into piles and immediately return for their next shipment. T. Smith Stevedores uses floating derricks in midstream (right) to transfer coal directly from barges to colliers on the Mississippi.



Classification Yard

90 million. Shipping agent Williams says the new construction leaves the port confident but wary: "We're afraid of Mobile and New Orleans."

Not to mention the harbor just 150 miles up the bay at Baltimore, which is expanding even faster than Hampton Roads and could lure away traffic. With a 157% increase in coal-export capacity already abuilding, Baltimore will soon be able to ship 36 million tons a year. Beyond that, two groups are talking about adding 25 million tons more. Finally, Baltimore has an ace up its sleeve. It is the only major coal port in the nation that has obtained federal authorization for dredging to deep-



Midstream Transfer

en its channel. If it can get the money to pay for the job (some \$322 million is necessary), Baltimore could be in a commanding position to grab traffic.

Ocean-shipping costs are being radically altered by the proliferation of supercolliers, coal's counterpart of the supertankers that revolutionized oil transport in the Sixties and Seventies. The huge coal ships, which at 1,000 feet are almost as long as the Empire State Building is tall, provide significant economies of scale. While many supercolliers are active in world trade, they cannot take on a full load at U.S. coal ports, because at 100,000 deadweight tons they require a channel depth of about 50 feet. No major U.S. coal port is deeper than 45 feet.

Many ports have applied for the right to deepen their channels, but the approval process is still back in the age of the clipper ship. Approvals routinely take 20 years, though Congress is considering legislation to speed up the action. If Baltimore can deepen its channel to 50 feet, a 110,000-ton supercollier loading there could knock \$4 off the current \$15-a-ton cost of carrying coal to Amsterdam in a 60,000-ton vessel.

Mobile is after Appalachian coal, too. While the port can't economically handle traffic from the northern mines, southern producers in Tuscaloosa and Birmingham are less than 300 miles away by rail or barge. Gerry Robinson, general traffic

manager of the Alabama State Docks Department, surveys the machinery that sprawled over 100 acres of the impressive McDuffie Island export-coal terminal and pronounces it "a classic example of understated southern elegance." But there's nothing understated about McDuffie or what's happening to it. Backed by a \$55 million bond issue, the coal station will more than double capacity, to 23.5 million tons, within two years.

## A long way to Kenova

One hundred forty miles west, on the lower Mississippi, New Orleans and other cities are enjoying an unprecedented coal-export boom. The activity may seem surprising since the New Orleans area is not the most economical place from which to ship Appalachian coal. The distances make handling it expensive, even when it is carried to portside by low-cost barge. For example, Dravo estimates that coal from the Kenova area in West Virginia, which can be hauled and loaded at Hampton Roads for around \$15 a ton, would cost \$20 a ton delivered and loaded at New Orleans. In many cases, the port is better situated to handle lower-quality midwestern coal, which can't be economically shipped to the East Coast and so follows the winding track of the inland waterway system that drains from lower Illinois into the Mississippi and the Gulf.

continued

But despite its handicaps, New Orleans shows promise of becoming a muscular, and perhaps disruptive, competitor. European and Asian customers have been flocking there because they have been getting poor service in the East. During the most serious logjams on Chesapeake Bay, foreign coal buyers descended on the ports, aghast at the disruptions. If a vessel is forced to wait in port, its charterer must pay demurrage, a waiting charge, just as a passenger pays the meter on a taxi stuck in traffic. Demurrage on a 60,000-ton collier can come to \$15,000 a day. That's 25 cents a ton of coal for each day's waiting, \$1.75 a week, \$7.50 a month. Before long, demurrage charges can wipe out the East Coast ports' cost advantages.

Mary Ann Heider, manager of the bulk department at Anders Williams & Co. in the port of Hampton Roads, recalls the reaction of a group of visiting foreign customers during the worst delays. "They did some heavy threatening," she remembers. "They screamed and screamed and screamed." Their message: "We've either got to come to some arrangement or we'll go elsewhere."

Elsewhere, in many cases, has been New Orleans. When export demand picked up on the Mississippi, stevedoring companies began loading coal from barges directly onto colliers in the middle of the Mississippi. Midstreaming, as it's called, is a river technique long used for loading metal ore, grain, and meal. Floating derricks with clamshell buckets sling the coal from feeder barges into the ships' holds. Half a dozen stevedoring companies can load coal in midstream, at \$2.75 per ton.

#### In search of security

Land-terminal operators saw the opportunity to get in on the business and are now looking to expand existing facilities or add new ones. No fewer than eight terminals—totaling nearly 50 million tons of capacity—are being planned along the lower Mississippi. "There's almost a Klondike fever in this whole coal thing," says Executive Port Director Edward S. Reed. The largest coal mover will be Louis H. Meece, president of International Marine Terminals, a husky, silver-haired entrepreneur who gained broad experience in coal-terminal facilities as a barge-compa-

ny executive. Meece is undertaking an expansion that will nearly quadruple capacity at his terminal south of New Orleans to 15 million tons a year.

The question is whether the demand will continue once Baltimore, Hampton Roads, Mobile, and other ports increase their capacities. Marsden W. Miller Jr., president of Miller Coal Systems of Baton Rouge, Louisiana, returned from a recent European tour thinking that foreign customers would be willing to pay a premium for coal shipped through New Orleans to be certain that an alternative to the eastern ports is available. "As long as you're within a dollar or two," he says, "what the buyer wants is security."

But if terminal operators don't get long-term commitments from foreign customers, they may find their facilities operating way below capacity. Magnolia Coal Co. has broken ground on new facilities with ut long-term contracts, and U.S. Steel's River & Gulf Transportation Co. is thinking about doing the same. Whether that makes sense will depend on how many terminal operators have similar ideas—and whether overcapacity gives for-

*continued*

## Six new ways to improve your next presentation.

■ Storage compartment provides space for a remote control and a spare lamp.

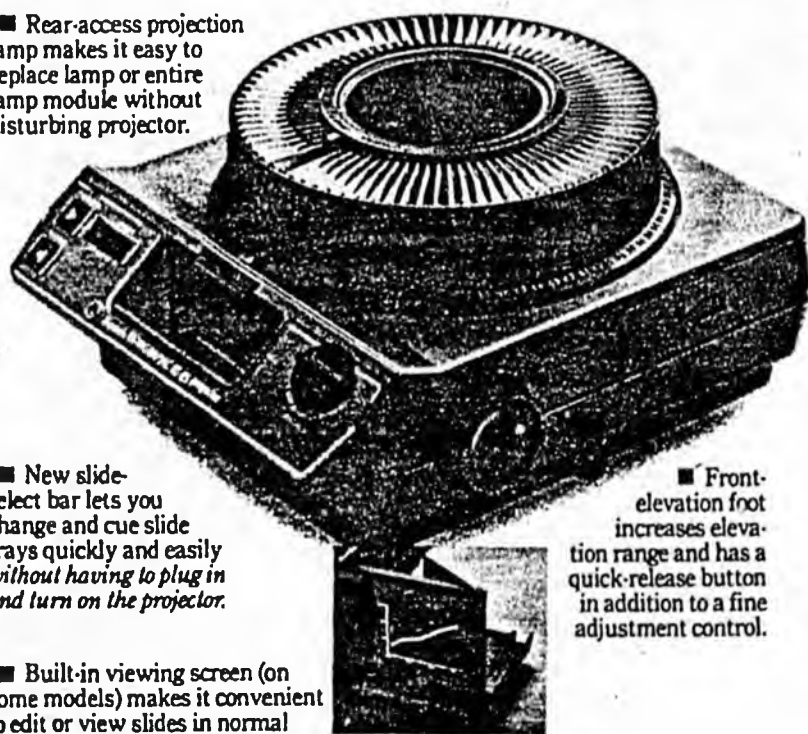
■ New high-efficiency, long-life lamp provides increased illumination with improved center-to-corner uniformity.

■ Rear-access projection lamp makes it easy to replace lamp or entire lamp module without disturbing projector.

■ New slide-select bar lets you change and cue slide trays quickly and easily without having to plug in and turn on the projector.

■ Built-in viewing screen (on some models) makes it convenient to edit or view slides in normal room illumination.

© Eastman Kodak Company, 1981



When we designed the new Kodak Ektagraphic III projector, we added features to improve performance and increase convenience. But we kept the ones that make the Ektagraphic projector a favorite of audiovisual professionals.

Features as dependable as gravity and as simple as the wheel. Choose from six models at your dealer in Kodak audiovisual products. Or use the coupon for details.



### The new Kodak Ektagraphic III projector.

Eastman Kodak Company  
Dept. A4049  
Rochester, NY 14650

Please send me details about the new Kodak Ektagraphic III projector.

Name \_\_\_\_\_

Title \_\_\_\_\_

Organization \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip \_\_\_\_\_ Phone \_\_\_\_\_

eign customers a chance to whipsaw their suppliers.

As if anticipating a future of overcapacity and rate wars, the terminal operators are looking hard at their economics. Meece believes that new eastern coal terminals will be more expensive than present facilities because they will have heavier capital costs to recover. While the loading fee at the N&W terminal is now only 46 cents, he thinks new East Coast terminals will have to charge \$3 to \$4. That could be enough to destroy their transportation-cost advantage.

### Here come the Indians

In answer, eastern terminal developers are negotiating with the N&W and the Chessie to cut the costs of moving coal from mine to port. For example, the Chessie says it is considering a reduction of about \$2 a ton in the cost of shipping coal by unit train into Consolidation Coal's new terminal in Baltimore. In answer to that, New Orleans operators are continually pressing for lower unit-tow rates on the Mississippi and other rivers. With many rates still being considered, it is too ear-

ly to tell whose economics may turn out most favorable.

Other competitors could come out of nowhere. D.K. Ludwig, 84, plans to anchor a warehouse ship in Delaware Bay that could receive coal from barges and transfer it to 140,000-ton supercolliers. The Tulalip Indian tribe has retained Dravo to study the feasibility of building a 15-million-ton terminal on tribal land at Possession Sound, Washington. And the Sun Hiel Shipping Co. of South Korea has obtained a contract to export coal at Seward, Alaska.

New York's harbor handles hardly any coal today, but that doesn't mean it wouldn't love to. The Port of New York and New Jersey has a marvelous advantage. The 12-mile channel from Ambrose Light to the piers of Staten Island and Port Jersey is much deeper than the entrances to other U.S. coal ports. New York could be dredged to 60 feet for less money than it would take to dredge any other port to 50 feet. A port 60 feet deep could accommodate supercolliers of 200,000 deadweight tons, nearly twice the size of any that has so far entered a U.S. harbor.

Local authorities are now thinking

about putting up the \$140 million ne to deepen the channel themselves. would avoid the lengthy federal authorization process. New York officials are so ing out foreign coal buyers to see if would be interested in contracting for that Conrail could haul from Appalach the harbor. If they do show interest, York could build 24 million tons of ternal capacity.

### Where chips are piled

With coal terminals being built planned at 29 harbors, the winners hard to pick, but it's clear where the ting is heaviest. The chips are piled hig on the old and classic formula: coal f the Appalachian fields moving thro Chesapeake Bay. As the market explo Hampton Roads will surely find its d nance eroded, but it will still reign as k Elsewhere, terminals that have not broken ground face the risk of be instantaneously superfluous. Those build without having their traffic ensu by long-term contract face cutthroat c petition. Indeed, the coal trade looks lil marvelous opportunity. For the brave.

# SCUDDER

Scudder offers special IRA plans for corporate, public, and other

## PAYROLL DEDUCTION IRA PLANS FOR EMPLOYERS

employers seeking ways to give their employees access to the new IRA

benefits. Automatic payroll deduction plans are available. Call for our comprehensive booklet describing Scudder's plans for employers.

Investment options are flexible and include six Scudder no-load mutual funds: money market, common stock, income, and international.

### SCUDDER INDIVIDUAL RETIREMENT ACCOUNTS

Scudder Fund Distributors, Inc.  
175 Federal Street, Boston, MA 02110

Call or write for details.

### NATIONAL GROUP IRA DEPARTMENT

1-800-225-2471

(within Mass., call collect  
617-482-3990)

### THE SCUDDER NATIONAL SERVICE NETWORK

Boca Raton • Boston • Chicago • Cincinnati • Cleveland • Dallas • Houston  
Los Angeles • New York • Philadelphia • Portland, (Ore.) • San Francisco

Type of coal  
cleaning etc -

$$\frac{100 \cdot 13}{100} = \frac{x}{2000} \cdot 100$$
$$20.13 = \frac{x}{20} \cdot 100$$
$$260 = x$$

Leasing permits - 20 yrs -  
3 sites in Alaska not  
needing permits - where?

89 - 82c BTU / AK  
139 BTU / other

was patch

private co. own planning -  
to to the very thing

no  
w/ proposed  
but  
road down  
the

Stage in plans?? (how long - down the  
rd)

Railroad v Deep port fee

what other product could utilize the rail.  
(Copper / Aluminum / uranium / etc)

- Reasonable Return

How long would it take to construct

The type of infra structure (3)

phase in - (planning -

By cost - <sup>severely</sup> ~~to be~~ <sup>very</sup> high

US or Alaska's involvement will be  
that of participation rather than a  
major contributor is it absolutely necessary  
to make this great more useful?



## INTRODUCTION OF IAN ROSS

Our keynote speaker comes to us armed with a background rich in experience of the kind we believe to be needed in Alaska. A mechanical engineer himself, he is a member of various engineering associations in North America and Europe and is Chairman of the Swan Wooster Group of Companies headquartered in Vancouver, British Columbia.

The Swan Wooster Group has a staff of 600 professionals and technicians active in major port and harbor bulk-handling projects in North America as well as 12 or 13 in other countries of the world. These include the Roberts Bank, Vancouver and Richards Bay, South Africa ports which I'm sure we'll hear about today.

Mr. Ross has been with his company for 30 years, serving as president beginning in 1966 and Chairman and president in 1971. He is also a member of the board of directors of Sandwell and Company and Williams Brothers Canada Limited, gas and oil pipeline consultants.

Mr. Ross' topic is ANATOMY OF A SUPERPORT: A LOOK AT ALASKA'S NEEDS. The topic alone could be the subject of an entire symposium. Such a title suggests a presumption of need of such facilities in Alaska to support coal marketing outside the state. And should such facilities be shared by other industries for transloading oil and oil and gas products, minerals and agricultural products, for example.

It is with extreme pleasure that I introduce a gentleman who is eminently qualified to discuss, in the time we have allotted, Alaska's bulk port needs.

Ladies and gentlemen, let's give an Alaskan welcome to Mr. Ian Ross.

THE ALASKA COAL MARKETING CONFERENCE

JANUARY 23, 1981

ANCHORAGE, ALASKA

Notes from the Luncheon Address

By Ian S. Ross

Chairman: Swan Wooster Engineering Inc.

Sponsored by

THE RESOURCE DEVELOPMENT COUNCIL FOR ALASKA, INC.

---

As background, I would like to briefly comment on a few historical facts concerning coal and then look at what has happened during the past decade or so and what we forecast could occur over the next two decades.

Following this I have prepared some slides to show where Alaska might fit into the world coal trading pattern, followed by details of some of the larger coal terminals and then a brief description of the major machinery components which would form the nucleus of a world scale coal terminal for Alaska, what it might cost, and the impact of a bulk terminal on the community.

One can say that the main reason for the evolution of coal production is that mankind developed a great appetite for energy. This appetite was fostered as man utilised tools to amplify human effort, harnessed gravity through water flow, captured fire and utilised heat and so on. This fire business started many years ago, and eventually moved to coal, particularly in the years leading directly to the feasibility in energy terms of the industrial revolution. This revolution created an appetite for more and more energy which in due course became satisfied by oil, relatively easy to move around the world, but remarkably concentrated as to its sources. That was of course the ultimate strength of the Organisation of Petroleum Exporting Countries (OPEC) - its concentration within that a dangerously unifying thread of Islam.

But coal's role was historically important - without its discovery, production and utilisation, the world would have stood still rather than advanced technically and economically but by the end of the 1960's the common view was that coal was an industry in decline even to the point that many countries, historically important as coal producers, were looking for ways to quietly and peacefully end their coal industries.

Indeed some still are, as an example France, where only 15 years ago France produced 50 million tons of coal a year but as a matter of policy this dropped by the progressive closing of pits to less than 20 million tons today and by 1990 this will be halved, and the end of the century is likely to see this coal production finished. This is more remarkable when at the same time the annual consumption of coal in France is now close to 50 million tons so that imports have had to compensate totally for the domestic production down turn.

Note: Slides Not Included in These Proceedings

Similar events are, and have taken place, in the U.K. Fifty years ago Britain produced 250 million tons of coal a year and this has steadily gone down so that today the level is about 50% or 125 million tons.

Pendulums swing, but who could have foreseen today the quite extreme statements from those in high places who say that coal is now the saviour of mankind, coal is the West's ace in the hole and so on.

Let us look for a minute at world energy consumption that is primary energy which is the consumption of energy for the first time. Today oil and gas account for about 60% of the world's primary energy needs, coal about 30% and the remaining 10% a combination of hydro and nuclear. Now a truly interesting and extraordinary fact underlying that division into energy sectors is transportation. Oil and gas have always moved to markets but coal has tended to bring consumption to the locality of its production.

After the decline of coal, principally steam or thermal coal towards the end of the 1960's the principal coal carried at that time on the oceans of the world was coking or metallurgical coal to be used in the production of steel. There were, of course, and still are major inland movements of coal - Eastern U.S.A. to Canada, Poland to its neighbours, etc., but very little steam coal was moved by ocean transport during this time. On the matter of coking coal the forecast world growth by 1990 is not expected to be dramatic it is only expected to be about 10% due to increased blast furnace efficiency requiring less coal per ton of iron produced, as well as further movement toward direct reduction of iron ore eliminating, in this case, the need for coal. One other interesting point is with regard to ship size concerning coking coal and this lies in the fact that coking coal has to be blended with other coals which is generally done at the blast furnace or importers site, thus limiting the tonnage of any one type of coal that can be accepted by the buyer. This in turn coupled in some cases by Panama Canal limits, means that some of our older coal exporting ports, which currently have 40' or so draft, that unless rebuilt will be less efficient as to the larger vessel size which will be required by the future steam coal trade.

In 1980 some 230 million tons of coal moved by sea, including coking coal, but only representing about 5% of the total annual world coal production of 2.5 billion tons, however in that same period the quantity of oil and gas moved by tanker from production areas to countries of utilisation was about 60% of total world production of oil and gas.

Now let us see how the expert forecasters of this world would have us shape our energy appetite, say over the next 20 years.

By any criteria this is the critical period. Why?

Because we have fear, not simply the matter of Islam or Iran but there is also the fear that no longer can we afford to have a bland reliance on the ongoing availability of oil.

Crude oil reserves are now at a level which must quite soon curtail the increase of oil production so that by the year 2000 we expect a plateau in oil production with a probable tailing off through the first half of next century.

So what of nuclear? It is clear to me that unquestionably we need to forge ahead on nuclear fission and fusion technology by applying it massively to the

base load production of electricity but even at a maximum rate of investment in such plants and full contract or commitment, we cannot expect to see any dramatic acceleration in nuclear energy production in percentage terms this side of the year 2000.

Much is talked today about solar energy and biomass, geothermal heat, tidal harness and wind. I cannot talk today adequately in the time allowed about these other alternatives except to give my view that these too must all be pursued and brought on to our energy menu.

And so I want to come back to coal.

We have seen the probability of a plateau for oil and gas on a global basis. The overall growth of our energy appetite, even allowing realistically for a successful effort at energy conservation will still grow at around 2.5% per year which means doubling about every 35 years, so that word 'massive' for coal's growth is not carelessly used.

Over the past 20 years the total global growth in annual coal production of coal was only 600 million tons including export and domestic coal. Currently about 230 tons move on the oceans in the form of export coal and now we are looking at an increase in this export coal over the next 20 years of 3 to 4 times that figure to conservatively 600 to 800 million tons but some groups are estimating that this figure can be as high as 1 billion tons a year by the end of the century.

Whichever we take, it is still a massive rate of growth but should not be confused with total world production, - this is the increase in volume to be moved by deep sea vessels to foreign markets.

Of this growth a significant tonnage will need the new infrastructure of rail, port and shipping to be moved across oceans to satisfy demands in distant countries. Coal will move from the U.S.A., Australia, Canada and South Africa to Japan and the Far East, to Europe, and of course coal from quite new coal producers such as Botswana, Mozambique, Nigeria, Colombia, Indonesia and from here in Alaska. I should mention that in the case of Colombia, in South America, they are getting ready to design a bulk coal terminal to export 15 m.t.p.y. rising to 30 m.t.p.y., this is an Exxon development.

Whether we take the low forecast for coal growth or the high figure the results of the required world-wide effort from the coal industry will have to be decisive if we are to satisfy our global energy appetite and I should mention that there are some very decisive steps being taken now in the way of new facilities by the importing countries.

The following slides show some of the world trends in coal exports, some of the major coal exporting and importing ports and where Alaska fits into this global scene from a transportation viewpoint.

It might be worth mentioning in the matter of transportation of coal to world markets that the total transportation cost (land, terminals and ocean) often exceeds the production cost of the coal. Therefore, one can readily see the need for all segments of the transportation system, including the port, to be highly efficient in operation.

SLIDE 1

The first slide indicates the relationship of Alaska to the world seaborne coal trade with the thickness of the lines in proportion to the annual volume of seaborne coal moved from the producing countries to receiving countries.

These are 1980 volumes and this picture is expected to change dramatically over the next 10 years. It is also interesting to note coal trade between the West coast of this continent to Europe - a coal trade that only a few years ago one would have said was impossible, and I gather that you have recently had enquiries from Europe.

SLIDE 2

There are a number of countries, some new to coal, planning substantial increases in coal imports, and we have overlaid these countries on the previous slide. Of particular interest to Alaska will be Japan, Taiwan and Korea, and of course your first trial shipment has already gone to Korea. Also in the Far East one cannot overlook the Philippines, Hong Kong and Singapore who are each requiring coal for power plant use. There are other possibilities such as Hawaii, who are now buying some coal from Australia whereas from a transportation advantage this coal should come from Alaska, as well as in the National interests, but in the case of Japan, Taiwan and Korea each one of these countries have already announced new coal import plans.

There is no doubt with the present situation in Poland, a country which was a major coal supplier for many years to neighbouring European countries, that these countries are now most concerned since it is vitally important to have security of supply of coal whether for power plant or blast furnace feed. One cannot over emphasize the matter of security and reliability and in a number of cases, in order to ensure security of supply, some countries will traditionally look for supply from several sources, a point which should benefit Alaska.

SLIDE 3

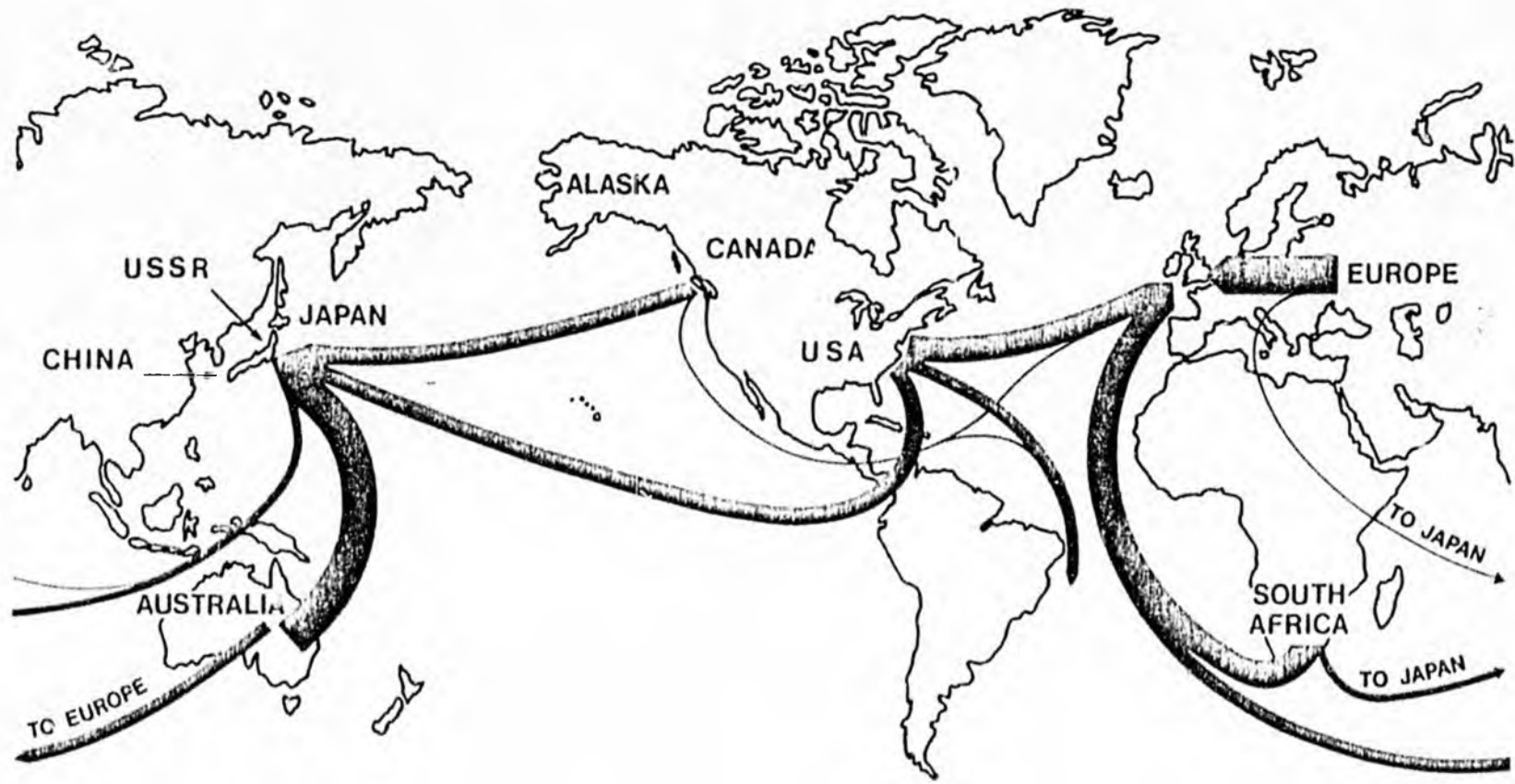
The next slide shows some of the major coal exporting ports in the world and provides an indication of the size in terms of annual tonnage thruputs of some of these terminals as well as some of the projected thruputs. These are order-of-magnitude figures only and could vary slightly, but will serve to indicate some developments which are taking place in coal terminals.

SLIDE 4

Complimentary to the previous slides this slide indicates a conservative growth in coal to be moved on the oceans of the world over the next two decades. Now these growth figures should not be confused with total world production which as pointed out before is some 2½ billion tons a year with most of this coal being consumed by the countries which mine it, nevertheless the forecast increase of 3 to 4 times today's ocean export volume to be carried on the oceans of the world by the year 2000 is dramatic.

# MAJOR ROUTES OF SEABORNE COAL TRADE

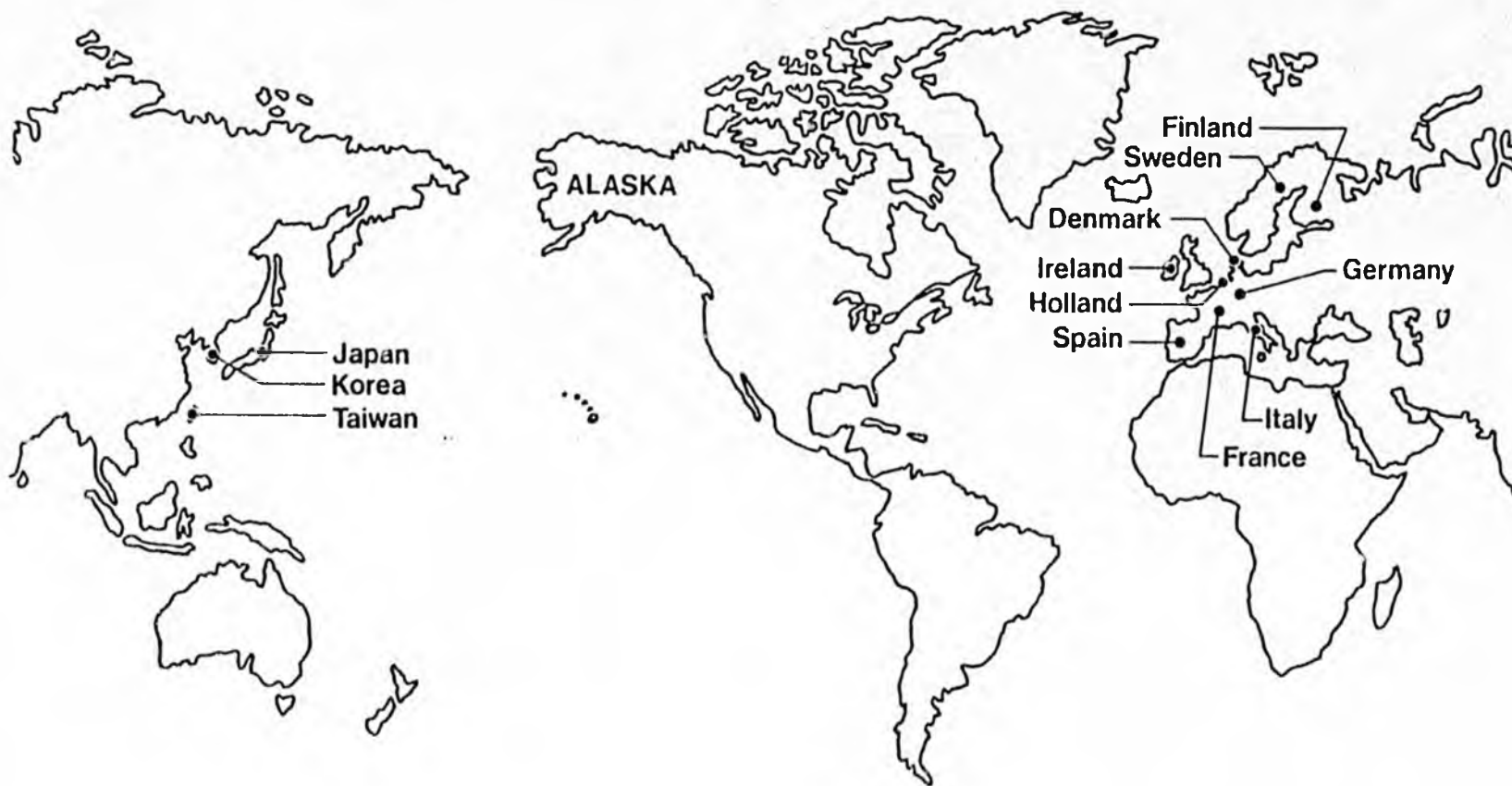
15



SLIDE 1

Thickness of lines indicate annual volumes movement of coal.

## COUNTRIES PLANNING SUBSTANTIAL INCREASES IN COAL IMPORTS



16

SLIDE 2

Note: There are other smaller increases of coal imports planned such as Singapore, Hong Kong, Philippines, etc. but these are relatively minor.

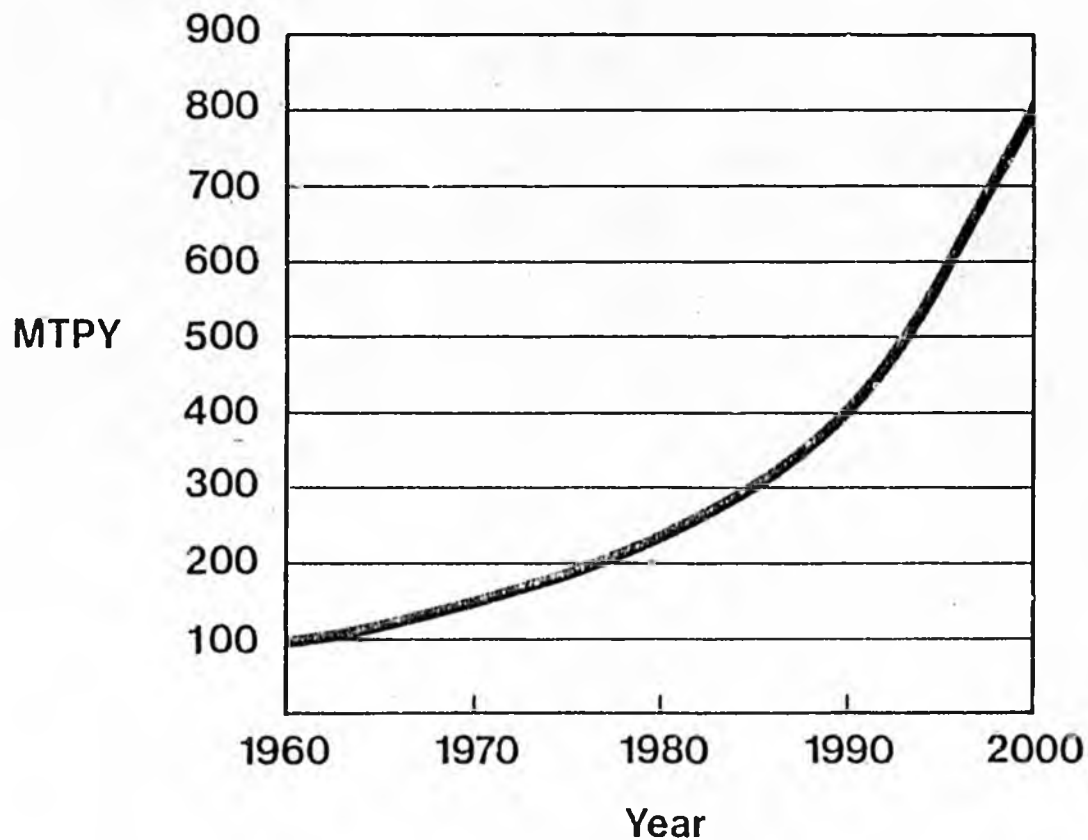
## ANNUAL THROUGHPUT OF MAJOR COAL EXPORT TERMINALS (MTPY)

	Current	Expanded
<b>AUSTRALIA</b>		
Hay Point	17	23
Newcastle Basin	10	—
Port Gladstone	7	—
Port Kembla	5	20
Port Waratah	1	
<b>CANADA</b>		
Roberts Bank	11	32
Neptune Terminals	3.5	9
<b>POLAND</b>		
Swinoujscie	12	—
Gdansk	10	—
<b>SOUTH AFRICA</b>		
Richards Bay	24	44
<b>U.S.A.</b>		
Hampton Roads (2)	24	—
<b>U.S.S.R.</b>		
Vostochny	—	5

SLIDE 3

Note: These are order-of-magnitude figures only and will be constantly subject to change.

# COAL GROWTH AND FORECAST TO THE YEAR 2000



18

SLIDE 4

Note: This forecast relates only to coal to be moved on the oceans of the world, i.e. overseas export coal and not to growth for domestic consumption which is, incidentally, far greater than the above in terms of total tonnage.



SLIDE 5

Here we have taken a specific market - Japan - who propose to triple their coal imports by the year 2000, and compared the end cost of coal, or f.o.b. Japan, on an order-of-magnitude basis against Western Canadian and Australian coals. These are comparison units costs only but serve to indicate the advantages Alaska has on the transportation side, both land and ocean, and how it reflects in the end price. These figures also indicate the relatively high transportation component in the price of the coal at the market place.

SLIDE 6

This is a comparison table showing the various nautical mile distances between Alaska and some of the major coal export ports to the receiving ports in Europe and in the Far East.

SLIDE 7

Where does some of this coal go?

This is the EKOM terminal in Holland which is a typical European receiving terminal with much of this coal being transshipped inland in Europe either by barge or rail.

Immediately adjacent to this terminal we are currently designing a new receiving terminal to import initially 6 m.t.p.y. rising to 25 m.t.p.y. The maximum size of vessel which will be accommodated here is in the 200 - 250,000 DWT size. I mention this because it does mean in order to optimize the total transportation system that the ship size to be accommodated at, say the Alaskan end of the system, should be in this order but it will be a few years before we see vessels of this size in the coal trade.

SLIDE 8

This is the Richards Bay Coal Terminal located on the Indian Ocean side of South Africa which was first started on the basis of 2½ m.t.p.y. The construction of the overall project began just 8 years ago and was designed not only to handle coal, which started it all, but other bulk and heavy lift cargoes. Just 4 years later, in 1976, after a massive dredging operation the original Bay being only 6 or 8 feet deep, not 60 feet plus like you have here in Cook Inlet, the first coal was loaded.

About 80,000 tons of coal arrives daily with the current annual rate of, in a space of just under 5 years, reaching 28 m.t.p.y. making it today the largest single coal terminal in the world and now being planned for 44 m.t.p.y.

SLIDE 9

The future Richards Bay Coal Terminal at 44 million tons per year. We have this additional work underway now with completion in 2 to 3 years time. At this point it might be interesting to mention the matter of ownership and operator since this issue has recently been raised several times. The land is owned by the National Railway, an arm of the Government, who carried out the dredging, site preparation work (that is the rough grading only) and laid power, water, road and rail service to the site, all of which we refer to as infrastructure. This area was then leased to 10 or 12 coal producers who in turn formed a terminal company to operate and manage the terminal. This company designed, built and financed all of the necessary

## APPROXIMATE DELIVERED COST OF COAL

\$/tonne (1979)

	Western Canada to Japan	Australia to Japan	Alaska to Japan
Mine	17.50	20.00	same
Land Transport	15.00	7.50	much less
Export Port	2.00	2.00	same
Marine Transport	8.00	7.00	less
Import Port	2.00	2.00	same
Delivered Cost	44.50	38.50	less

SLIDE 5

Note: These costs shown are for steam or thermal coal

## DISTANCE COMPARISON IN NAUTICAL MILES

	Japan	Rotterdam
Anchorage U.S.A.	3 700	9 350
Hay Point AUSTRALIA	3 950	14 550
Richards Bay SOUTH AFRICA	8 250	7 100
Roberts Bank CANADA	4 250	8 850

SLIDE 6

coal handling machinery, the electrical and mechanical work, the foundations, the terminal rail trackage, maintenance and office buildings, etc. Incidentally these coal producers include Shell, B-P, Total, Anglo-American and other major corporations. Most of the contracts for coal sales run for 10 - 15 years, as is the case with a number of similar coal developments, all of which allows for orderly investment and expansion.

On the matters of terminal charges the higher annual thruputs will reduce the cost of handling the coal across the terminal, certainly in the lower volume range.

#### SLIDE 10 & 11

Closer to home is Kaiser's Westshore Coal Terminal at Roberts Bank which is a large delta area off the mouth of the Fraser River near Vancouver. This terminal is now handling approximately 11 m.t.p.y. almost all this coking coal. The terminal began shipping some 10 or 12 years ago on the basis of 3 million tons per year. Plans are now underway to increase the thruput to 32 m.t.p.y. The new coal will be largely thermal coal. This has been a very efficient and successful terminal.

The site is unique -- it is a 50-acre artificial island constructed 3 miles offshore in order to reach deep water with minimal dredging and no maintenance dredging but at the same time, to produce a relatively economical site in terms of cost per acre which was achieved. The facility was in production 21 months from start of engineering and construction to completion and shipping coal including the creation of the "island".

#### SLIDES 12 & 13

This "island" at Roberts Bank is now being tripled in size at a cost of approximately \$40 million to prepare for the 32 m.t.p.y. thruput. The cost of this additional infrastructure which includes as before, rough grading and services, is being borne by the Federal Government who recover the total amount at no cost to the taxpayer in the form of lease charges, plus a thruput charge which can have an incentive formula to encourage greater thruput. The terminal operator will then construct all the necessary on-site facilities, the berth, coal handling plant, buildings, etc. costing in this case about \$200 million at the 32 m.t.p.y. level.

#### SLIDES 14, 15 & 16

The following slides are to indicate that a coal terminal can live peacefully with the environment and with residential dwelling and commercial buildings close by.

In the case of the Neptune Terminal, SLIDE 14, it was coal which initially launched this terminal at 3 m.t.p.y. which now in addition to coal, the terminal handles bulk potash as an export and phosphate rock as an import.

Vancouver Wharves, SLIDE 15, is a multi-product bulk terminal handling products such as bulk fertilizer, sulphur, potash, copper, lead and zinc concentrates, packaged lumber and pulp again located close to commercial and residential areas.

The next slide takes us back to Richards Bay for a moment where immediately adjacent to the terminal is a nature reserve and here in the foreground, with the terminal right behind, is a flock of pelicans which have become the logo of the terminal.

What type of site do we need for a bulk port"

Ideally, level land and if the area is to be served by rail then a site initially in the order of 30 - 50 acres, but which could be expanded if necessary to several times this size.

Deep water is essential.

When we look at the forecast figures for export coal growth and the fact that today that we are already loading cargoes in the 160,000 DWT range then obviously for a new port we should, if possible, make provision for ships in the order of 200,000 to 250,000 DWT. It is interesting to note that 2 new coal receiving terminals now being planned, one in Europe as mentioned earlier and one in the Far East are both allowing for vessels of 200 - 250,000 DWT size.

The power demand by a terminal is not excessive nor are the other services but the land access by road and rail is important as well as availability to labor.

There are other opportunities once a facility is in place which can provide power, rail access, deepsea ship access, labor availability and land, and particularly where coal or other sources of energy are available which could lead to the establishment of an industrial park adjacent to such a terminal. This has occurred in other countries where the terminal has been the stimulant and there are obvious advantages in over-the-fence-trading.

#### SLIDE 17

The various key components at Roberts Bank are similar to most coal exporting terminals and would be typical examples of the equipment etc. required for a bulk coal terminal for Alaska. If we start at the receiving end and assume that the coal will arrive by train as compared to conveyor, pipeline or truck, then the unit trains which generally arrive, depending upon distance and other factors, in units from 60 or 70 cars up to 200 cars, are now handling upwards to 16 - 17,000 tons of coal per train.

#### SLIDE 18

These unit trains are permanently coupled with rotary couplings allowing the cars to be rotated and dumped without uncoupling and then moved ahead with an indexing mechanism, the whole process taking about 90 seconds per car of 100 tons of coal for a single dumper.

A fast train turn-around time is essential both at the mine and at the terminal, not only does it keep the number of trains needed to a minimum, but equally important it reduces the possibility of the coal freezing.

A good example of a high speed unit train operation is the Kaiser Coal/CPR unit train operation in Western Canada where the round trip distance is 1500 miles, much of it in sub-zero weather with heavy grades and including locomotive servicing, crew changes, loading and unloading - the complete round trip operation is accomplished in 85 hours.

The economics are obvious if you double this time you also double the number of cars and locomotives required to move the same annual tonnage plus the additional operating costs. All this reduces down to the need to have a good rail layout at each end of the system which in the case of the terminal can often dictate the shape and extent of land required. A complete loop track at the terminal is commonly used which allows the train to be unloaded and headed back to the mine without any shunting or reversing.

From the train the next major function is stockpiling, however, the terminal should always have the ability to move coal directly from train to ship. The calculation of the optimum volume to be allowed for in storage depends upon a series of factors, such as the train and ship arrival patterns, annual thruputs, number of grades to be handled and length of time due to internal combustion that certain coals can be allowed to remain in storage. The stockpiling and reclaiming operations can be carried out by separate machines or by the same machine or by various combinations depending upon annual thruputs.

#### SLIDES 19 & 20

The combined machine, known as the bucket wheel stacker reclaimer, is in common use today. This machine can stockpile and reclaim coal for shiploading at rates up to 6 - 7,000 T.P.H.

A coal sampling tower is often located just prior to the coal going into the ship. Sampling is important as it generally forms part of the contract and determines the final value of each shipment of coal.

#### SLIDE 21

There are a number of different types of shiploaders, and usually items such as cost, foundation conditions, type of berth, ship size, tidal ranges, etc. must be considered in selecting the best suited shiplading equipment.

#### SLIDE 22

The import and export of other commodities can be accommodated - a typical example would be bulk alumina or bauxite for the manufacture of aluminum which has a high power demand. I understand that proposals along those lines have been considered for Alaska.

#### SLIDE 23

What does all this equipment cost in order to get into the coal port business?

If we assume that the land is available and adjacent to deep water, and if we exclude the cost of the land then the capital cost in today's dollars for a typical terminal to handle say 6 - 10 m.t.p.y. of coal would be in the order of \$65 million and would break down into the major items as shown, most of which were shown on the previous slides. The only major variable in the above cost summary would be the cost of the marine structures which in any event vary from site to site as compared to the other items of equipment. (We are, at this moment, just starting 2 coal terminals which are being designed for thruputs of 9 - 10 m.t.p.y. and excluding the land cost the capital costs, similar to the terminal described here, are \$58 and \$65 million - these are today's prices which serve to indicate that the figures shown on the slide are in the right order).

**6 - 10 MTPY TERMINAL APPROX. CAPITAL COSTS (1981) \$**

Site Services and Rail	\$ 2,000,000
Unit Train Unloading	7,000,000
Conveyors	8,000,000
Stacker / Reclaimers	18,000,000
Shiploaders	12,000,000
Marine Structures	10,000,000
Sampling Plant	1,500,000
Electrical Equipment	5,000,000
Ancillary Buildings	1,500,000
<b>TOTAL (excluding land costs)</b>	<b>\$ 65,000,000</b>

SLIDE 23

NOTE: The marine structures shown here at \$10 million will vary from site to site. Due to conditions of depth, distance to shore, ice, tidal range and ship size.

A port can make a major contribution to the economy of the region in which it is located. The Port of Vancouver recently commissioned a study of its impact on the Greater Vancouver area and the study found that Vancouver, a major loading port for bulk commodities:

- . directly and indirectly provided one job in ten in Greater Vancouver;
- . created 12½ percent of the region's payrolls; and
- . was responsible for, directly or indirectly, 16½ percent of sales and revenues in Greater Vancouver.

Although labour-intensive general cargoes have a greater economic impact than bulk cargoes such as coal, bulk cargoes are still very important and some comparative numbers for the Port of Vancouver adjusted to late 1980 price levels are:

- . coal, with a total port-related payroll of \$32 million per year and a volume of 14 million tons, or \$2.90 per ton;
- . other bulks such as copper concentrate and sulphur, with a payroll of \$150 million and a volume of 11 million tons, or \$13.00 per ton; and
- . general cargo, with a payroll of \$600 million, and a volume of 5,600,000 tons or \$107.00 per ton.

A new bulk port in Alaska will add to the economic health of the surrounding community and it will provide productive, high-income jobs in the port and terminal. Expenditures by these employees will create service jobs for others, with the port generally creating an economic activity that would not otherwise take place.

Ports such as we are considering can be funded and managed privately by one user or by a consortium of users or by a local public authority. If there is to be more than one user and I assume that this could be the case in an Alaskan bulk coal port, as well as possibly more than one product to be handled, then there is merit in considering an independent terminal operator either public or private, in order to avoid conflicts of interest by different users - which arise in the accommodation of different cargoes, and different arrival patterns. I mention this because in some cases where a government organization has initially funded the infrastructure development they have stipulated in the lease agreement with the terminal operator that the terminal must be made available to others for handling their products, providing that these other products are of a similar nature and have reasonable annual thruput volumes for practical reasons.

Finally as to coal's future why not look at the oil industry?

In a phrase the oil majors are betting on coal.

These oil companies have invested over the past few years several billion dollars in the acquisition of or in securing of important participation in companies and coal reserves around the world. The catalogue of all these activities would take a long time to read out, to name a few - Shell, Exxon, Continental, Mobil, Sohio, B-P, Standard Oil California, Gulf, Petrofina, Occidental, Atlantic Richfield, Total of France, etc., are all deep into coal mining and marketing on several continents which perhaps best of all demonstrates that they, as the energy leaders of the post war period each

know that coal is to be the base energy for industry over the next similar period (30 - 40 years) by which time the new generation of nuclear energy should be well and truly starting to share the full strain.

As a last point I thought we could share some thoughts on the pricing of coal and how it differs from oil. Now you do recall the difference which I emphasized between oil, which moves in a major way internationally and coal which does so traditionally in a relatively minor way. Right from the 1920's there has been a recognized pricing mechanism for oil recorded daily in the journal Platt's Oilgram. It still carries on today. Thus a concentrated yardstick for pricing crude oil did simplify OPEC's job when they elected to force up the global level of crude oil prices in 1973 and continued the action progressively ever since!

The important point is that the impact of increased crude oil prices is direct and international, we all know that - wherever we reside or in whatever country our business is mainly involved. Now coal in this regard is completely different. I said earlier that the size of the international coal trade is but marginal relative to production - say 5% today of global coal production. This means that almost all coal is produced and consumed within its own region. Russian coal in Russia, U.K. in U.K., USA mainly in USA, India in India, China in China, South Africa in South Africa and so on. Each of these is an example of what I am saying. What these countries pay internally for their coal - their own coal, whether this is high or low by another's standard has no bearing whatsoever on the price which a consumer will pay for coal from another economic region.

Take Egypt as a typical example, Egypt is buying coal from USA, USSR, Poland and Australia. How much coal from each supplier is Egypt's affair as well as the various costs of coal laid down at Egypt's ports from the supplying countries. This is free trading in coal with no fixed pricing structure. But this free trading which is typical is forcing coal producers to establish real mining efficiencies and first class transportation to ports, as well as efficient port operations. It is also causing ship owners to set themselves up with properly designed coal carrying vessels. At the other end consumers must match all this by their own capabilities in receiving coal efficiently and economically as a part of the total transportation system. When the final decision is made on the port selection, the land and marine access, and this may sound elementary, but we must remember that the coal buyer in effect has the last word for not only is he looking for security and reliability of supply but also for the safest possible marine access and secure facilities for his ships. To put this another way, ideally one should decide from a national standpoint where the best port location is, the railroad route, etc. because our real competition is not here in the "backyard" - it is from other countries.

This has been a broad-brush review of coal on a global basis and of some of the world bulk coal ports together with the components which would go into a bulk port such as could be developed here in Alaska.

Today we are seeing certain new coal mines being developed at about half the cost of developing some of our oil reserves in terms of equivalent energy units. Also, as a typical example, the Hong Kong Power and Light Authority who are today installing new large coal fired thermal power plants, estimate that the cost of coal as a fuel, which they must import to fire these plants, will be half that of oil.

And in conclusion, while we know that we must control our future energy diet and that some items on the menu will be expensive, I can assure you that for some years ahead one of the main dishes on this energy menu will be coal.