

United States Ports: Coal Based Expansion

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Summary

In the past 18 months 'International Bulk Journal' has published approximately 80 pages of text discussing in depth issues affecting the expansion of dry bulk handling ports on the North American continent. These detailed the various projects on the U.S. east and west coasts, the Canadian west coast, the Great Lakes and St. Lawrence Seaway as well as those on the U.S. Gulf and, in particular, the terminals of the Lower Mississippi.

This survey of recent IBJ reviews outlines major factors such as the dredging issue and levelling in coal export growth in 1982 which have influenced expansion projects in the U.S.

Introduction

As a direct result of the rapid pace of steam coal increases intense debate in all sectors of the U.S. coal export industry has developed. Major topics for debate have included port congestion and vessel waiting time and the inability of existing ports to fully load vessels drawing more than 40—45 ft; the possible imposition of user fees aimed at recovering the cost of port and inland waterway maintenance and improvements; the attitude of the railroads particularly towards contract rate making and their application for the exemption of export coal moves from the regulatory control of the ICC; the formation of pressure groups such as the Alliance for Coal and Competitive Transportation (ACCT) intended to promote slurry pipelines in competition with railroads; and the whole complex and divisive issue of dredging requirement, funding and the permitting process; not to mention the possible trend to building terminal over-capacity.

Of all the issues arising out of the export coal expansion, dredging and coal terminal capacity dominate but while of course, these are interrelated it is important to see both issues separately.

In general, U.S. ports offer channels of 40—45 ft which may be sufficient to accommodate fully laden vessels in the

Panamax class or possibly larger according to vessel specification.

Until 1976 all U.S. channel dredging was federally financed. However, in the face of lower budgets for increasingly costly dredging projects a moratorium on all new starts has been in effect since then.

In broad terms arguments in favour of dredging certain U.S. ports to 50 ft to accommodate bulkers in the 130,000 DWT class have been justified through emphasis on the economies of scale and the fact that competitive coal producing regions such as South Africa and Australia, as well as many receiving ports, offer a large number of terminals capable of accommodating fully laden ships of the largest size.

Such argument has been weakened by the condition of the freight market narrowing margins between classes of vessel as well as the levelling in trade volume and the preponderance of Panamax class newbuilding deliveries (more than 158 scheduled for delivery during the course of 1982). Nonetheless, ports and shippers see the construction of deep channels as vital to the maintenance of U.S. competition in the international coal market in both medium and long terms.

At the commencement of the coal boom there were immediate calls for crash dredging programmes and all major port authorities have come forward with multi-million dollar dredging programmes. Since then a general consensus has developed to indicate that while some deep draught facilities will be required not all coal terminals will need 50 ft of water to permit the U.S. to achieve its coal export potential.

Bearing in mind the interests of the various parties outlined above a common objective would appear to be that some new deep channels should be constructed. The major stumbling block, however, is funding.

In the face of a substantial balance of payments deficit the Administration stance has been to require 100% private funding for all maintenance on new project dredging.

In response, however, to the Government's stated position a wide range of counter proposals have been submitted to the Senate and Congress in an effort to oblige the Administration to acknowledge its responsibility to participate in some way on channel dredging in recognition of the contribution of ports to the national interest.

Coal Terminal Developments

As illustrated in Table 1, U.S. coal loader capacity from the East Coast terminals presently totals approximately 85 mt *, not including a number of small, essentially domestic, coal loading facilities. Export tonnage in 1981 comprised 110 mst ** of which, according to the CEA, 92 mt were shipped overseas.

Obviously not all export coal was loaded through East Coast terminals but bearing in mind that actual throughput capacity of a facility generally falls short of rated capacity, 85 mt of loadout ability on the East Coast falls short of annual requirements.

Table 1: East coast coal loaders

Port & Terminals	Capacity (mt) *		
	Existing	Developing	Proposed
New York			
AEA		3 (July 83)	+ 7
NY/NJ			10—20
NY CITY			10
Philadelphia			
PIER 124	3	+ 7 (end-82)	
PORT RICHMOND		4 (July 82)	
FAIRLESS			3
Baltimore			
CONSOL		10 (July 83)	
CURTIS BAY		10 (July 82)	
BAYSIDE			
CHESSIE	14		
PORT COVINGTON	2.5		
SPARROWS POINT			10
MARLEY NECK			25
Virginia Port			
CHESSIE	20		
N & W	40		
MASSEY		12 (early-83)	
DTA			15
VPA			18—25
QUATRIN		5	
PATRICK			5
North Carolina			
MOREHEAD. AOV	2.5		
WILMINGTON.			
WILLIAMS			10—15
AMERICAN COAL			4
South Carolina			
CHARLESTON		4 (early-83)	
Georgia			
SOUTHERN BULK	3		
ELK RIVER		3—12 (on hold)	
TOTAL	85	+ 58—67 (50 mt by mid-1983)	+ 117—139

* mt = million tons = 10⁶ t

Source: Compiled by International Bulk Journal

* mt = million tons = 10⁶ t

** mst = million short tons = 0.9 · 10⁶ metric tons

Since the early acceleration of coal demand beyond port capability through 1980, both Norfolk & Western and the Chessie have introduced registration systems for vessels wishing to load which have had the effect of substantially reducing the physical queue of vessels waiting to load whilst also reducing the impact of demurrage on shipping costs.

With a need to overcome port congestion problems while simultaneously providing loaders geared to steam coal trade requirements, a number of new facilities were announced at an early stage on the basis of assured base-load traffic by the coal interest developers.

A number of such terminals including Massey at Newport News, the Occidental Petroleum subsidiary Curtis Bay Company's Bayside Pier at Baltimore and Consol at Baltimore are scheduled on-stream between now and July 1983 comprising approximately 32 mt of the ±50 mt of additional capacity expected on line in the next 15 months.

More in response to envisaged market opportunities than firm coal throughput commitments, 1981 was characterised by a surge of proposed coal terminal announcements. A number of such facilities are expected to progress even in the short term, more especially those outlets geared specifically to meet the demand of low volume shippers. With early enthusiasm over market prospects being affected by recent softening in demand and the prospect of little if any additional trade growth in the next two years many other proposals have fallen by the wayside.

The following section therefore seeks to detail the state of progress of a number of uprating or newbuilding East Coast coal loaders presently under construction or still under study.

Maryland Port Administration

According to a Booz-Allen & Hamilton study Baltimore may expect 40 mta * of coal traffic by the late 1980s, generating \$ 251 million to the Maryland economy each year. Meanwhile, coal across Chessie's Curtis Bay and Port Covington operations amounted to approximately 14 mt in 1981. Major attention is now being focused upon the two newbuilding facilities in the port; the Bayside Pier of the Curtis Bay Company now under test and scheduled on-stream before July and the Baltimore Coal Terminal of Consolidation Coal Sales Company scheduled on-stream by mid-1983.

Bayside (see Fig. 1)

Owner/operator of the Bayside Pier is the Curtis Bay Company, a wholly-owned subsidiary of Occidental Petroleum and sister to Island Creek Coal.

Turnkey contracting in the 10 mta terminal has been carried out by Babcock Contractors International of Pittsburgh and commissioning of Phase 1 of the \$ 25 million project is expected in June or July 1982.

The terminal includes a Strachan & Henshaw Rotaside car dumper, on-ground storage capacity of 350,000 tons served by a 3,500 t/h conveyor distributing through eight stacking tubes into conical piles and underground reclaim via 47 underpile gates with vibrating feeders at a rate of 6,000 t/h.

In the first phase of operation coal from the Bayside facility will be loaded out over Chessie's existing loader. Its own

* mta = million tons per year = 10⁶ t/year

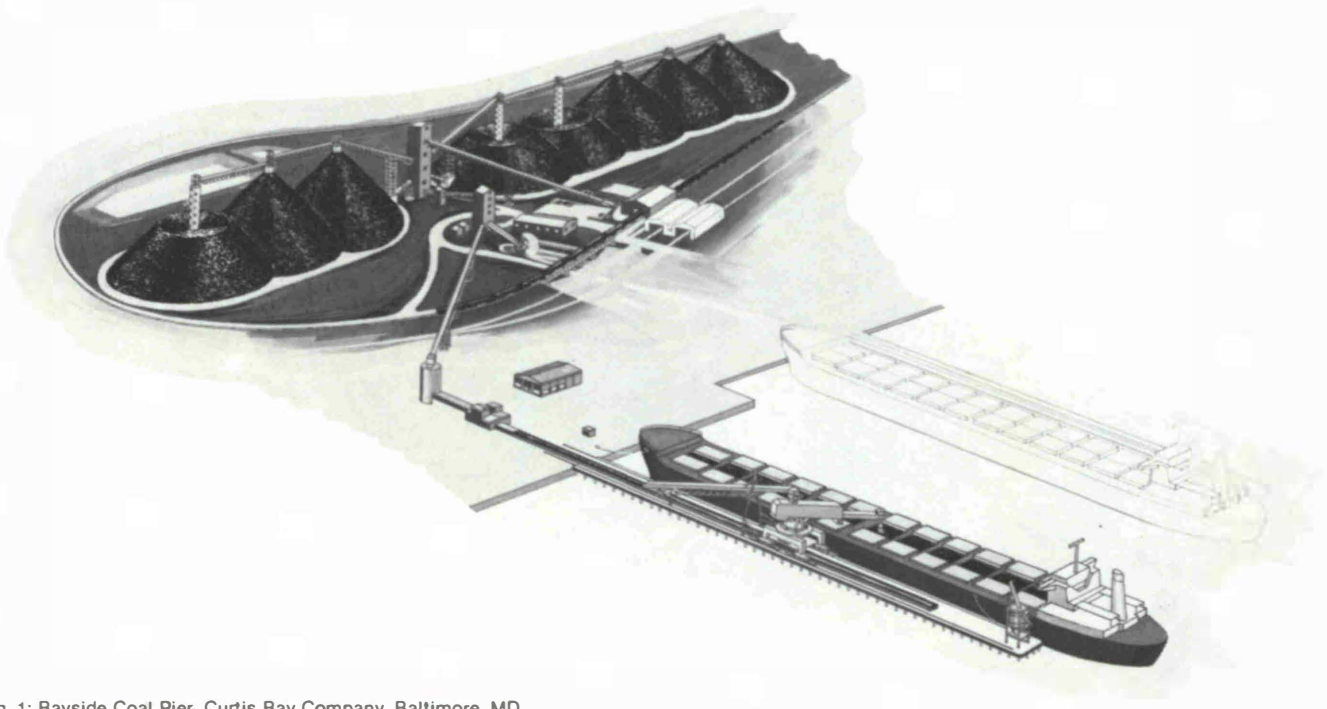


Fig. 1: Bayside Coal Pier, Curtis Bay Company, Baltimore, MD

pier, to be equipped with a 7,000 t/h shiploader, is scheduled for completion in the first quarter of 1983.

Among the notable features of the terminal will be sampling of inbound and outbound coal performed with sampling systems supplied by Redding of Pittsburgh and carried out by Commercial Testing and Engineering Co. of Lombard, Illinois.

One of the oldest and largest testing companies in the U.S., Commercial Testing was established in 1908 and is to operate an on-side laboratory at the Baltimore facility for the optimisation of sample turnround.

Baltimore Coal Terminal

With exports of more than 12 mt in 1981, Consolidation Coal owns and operates mines in Pennsylvania, West Virginia, Ohio, Indiana, Illinois and Kentucky and has a contract with Rheinbraun of West Germany for developing a mine in south west Pennsylvania.

Thus, with adequate reserves of its own and a commitment to the export market, Consol's Baltimore coal terminal will be dedicated to its own use and capable of handling 10 mta.

The site comprises 100 acres, of which 65 acres is now under development, previously incorporating the Canton Marine Terminal which Consol acquired in 1980 at a cost of some \$ 30 million.

Investment of a further \$ 70—80 million will develop the terminal's coal handling capacity comprising a Heyl & Patterson car dumper and stockyard equipment comprising two IHI stacker/reclaimers rated at 5,000 t/h and an IHI shiploader capable of slewing on both sides of the pier and rated at 7,000 t/h.

Heyl & Patterson supplied the dumper to the existing Chesie pier in 1968 and the new unit will be a tandem machine rated at 5,000 t/h and will be equipped with Heyl & Patterson's special rail-mounted coal breaker mounted in the

dumper pit above the grid. Incoming material will flow from the dumper via sampling systems to the 1,800 ft yard conveyor and into stock over the 180 ft boom of the stackers. Average reclaim rate is expected to be 3,750 t/h with material passing via a 2,000 ton surge bin and outbound sampling system to the 7,000 t/h slewing loader serving a 1250x42 ft berth on the east side of the pier and an 800 x 30 ft berth on the western side of the pier.

Total storage of 0.75 to 1 mt will be available and further expansion to the site may be carried out by construction of a new quay wall and land infill.

Coal handling system for the terminal has been developed by Swan Wooster allowing for possible expansion to a 20 mta capacity in the future. Site engineer is Century Engineering, the same company overseeing the MPA-Hart-Miller Islands spoil site development.

Of other projects under consideration, but not active development, at Baltimore, Ramsay, Scarlett has proposed development of a presently de-activated ore pier for coal exports at Sparrows Point. Costing \$ 26 million such a facility might handle 10 mta and be operated within months of work commencing.

An early proposal by parties including Soros Associates of New York and Pittston to develop a 15—30 mta loader at Marley Neck at a cost of some \$ 215 million has not progressed beyond study stage.

Virginia Ports Authority

The largest single coal export centre in the United States, not to say the world, the Lamberts Point (Norfolk & Western) and Newport News (CSX) piers loaded out 48.63 mt in the last reported financial year of the port authority ending June 1981.

Coal thus accounted for about 80 % of the 62 mt of dry bulk passing through the VPA terminals of Newport, Portsmouth

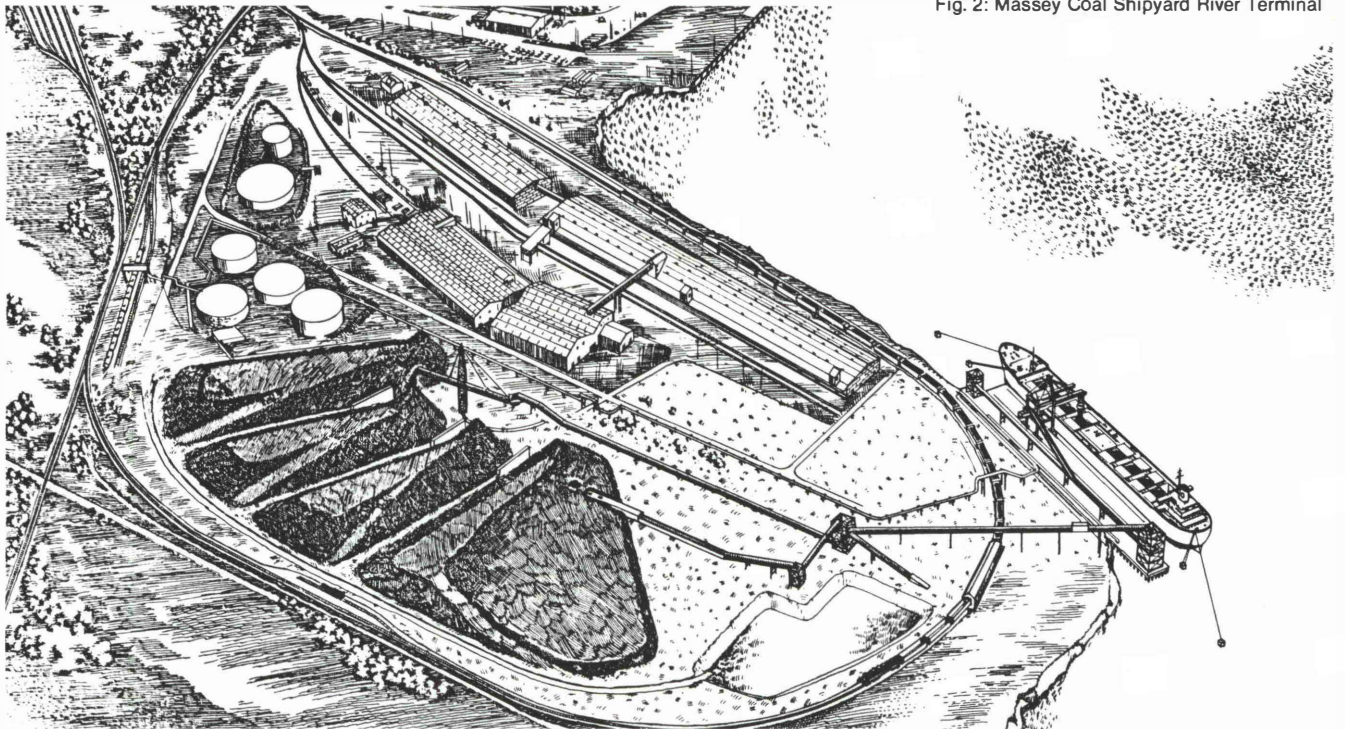


Fig. 2: Massey Coal Shipyard River Terminal

and Norfolk. Other bulk export commodities were dominated by 4.3 mt of grain (5.4 mt in fiscal 1980) over the Cargill and Continental facilities at Chesapeake and Norfolk.

Bearing in mind the argument between railroads and coal producers even the NCA/CEA have praised the railroads for their achievement of efficient loading of coal more suited to ground storage rehandling than loadout direct from railcar.

In 1981 CSX reports that it loaded some 14.5—15 mt across its Newport News Piers 14 and 15. Meanwhile, on a previously assumed maximum capacity of 40 mt Norfolk & Western has been loading record amounts of coal through its Lamberts Point Piers 5 and 6 facilities and indeed in February 1982 loaded 3.9 mt in a 28 day month and then went on to load 4.5 mt through March. The latter rate is equivalent to some 54 mta which makes Lamberts Point the largest capacity coal terminal in the world with, in perspective, an annual throughput potential double that of Richards Bay in South Africa.

With such pre-eminence in coal a number of coal companies are presently developing additional steam coal loading terminals within the Hampton Roads area. To accommodate larger carriers, the VPA also has two channel deepening schemes which await the outcome of the present funding debate.

The most well known scheme is the \$400—500 million project which would provide the Greater Hampton Roads area with two deep channels of 55 ft. The second and most probable development in the short term is a \$40—45 million project to dredge an outbound channel of particular benefit to coal carriers to a depth of 50 ft.

In terms of funding the Port Authority is looking for a maximum of 40% private funding on capital works and 25% maximum on O&M. On such a basis any port specific user fees would be expected to be particularly modest at Hampton Roads when offset against total port tonnage over a given period of years.

Massey

Of the new terminals Massey Pier 9 at Newport News, engineered by Dravo, is the most advanced with commissioning expected first quarter 1983 (see Fig. 2).

Now almost 50% complete, the 12 mta capacity terminal will be dedicated primarily to the coal company's own use with possibly some low volume movements on behalf of other shippers.

Work on the terminal commenced in April 1981 and the 60 acre site will accommodate a loop track capable of holding up to three 100 car unit trains. Served by the Chessie, railcars arriving at the terminal will be discharged by Strachan & Henshaw tandem rotary dumper of 5,000 t/h capacity.

Coal will be sampled both inbound and outbound and from the car dumper material will be fed through a system of overhead conveyors with shuttle trippers rated at 6,000 t/h maximum to a series of 12 piles totalling 1.36 mt of ground storage.

A notable feature of the facility will be its computer controlled blending of coal through the use of underground reclaim techniques. Each storage pile being underlined by six vibrating feeders serving the tunnel reclaim belts the system is designed to achieve an accuracy of blend of $\pm 1\%$.

The 1,220 ft pier is served by an 8,000 t/h maximum capacity Sumitomo shiploader capable of slewing to serve vessels up to 175,000 DWT specifically on both sides of the pier. Boom length is 148 ft and equipped with telescopic spout and trimming device.

Dominion Terminal Associates

Located between Massey and the Chessie's existing Newport News facility Dominion Terminal Associates has received all permits for the development of a 12 mta capacity terminal on 64 acres of its total 74 acre site and construction is expected to commence in June or July 1982.

Partners in the DTA facility will be Utah International, ARMCO, Ashland, Westmoreland, and a fifth partner who prefers not to be identified at this stage.

Pre-feasibility on the project was carried out by Dravo Corp. with Kaiser Engineering winning the contract engineering award.

Coal originated in Kentucky and West Virginia will be hauled to the terminal by CSX and will comprise 85—90% steam coal.

Other Projects

Of further coal terminal projects in the Greater Hampton Roads area, study work is reported to be continuing by **Patrick Coal** and the **Quatrain** group with regard to maximum 5 mta multi-user facilities at Chesapeake and Portsmouth respectively. Site work at the Quatrain terminal is underway.

Of the major projects the VPA reports some progress with the plants for the development of an 18 mta expanding to 25 mta capacity terminal at Portsmouth.

Variouly referred to as the **Virginia Coal Terminal** or Hampton Roads Coal Terminal the proposal projects development of part of the Cox site at Portsmouth by coal interests including Pittston, Consol, Massey and Island Creek.

Studies on terminal design have been carried out by Soros Associates and once the development group agrees differential rates with the railroads CSX and Norfolk & Western development is likely to go ahead.

In terms of differential railroad rates some of the new terminals designed specifically for steam coal are seeking special railroad terms on the basis that faster terminalling is of benefit to the railroads through improved equipment utilisation.

Philadelphia/Delaware River

Around Philadelphia and along the Delaware River coal terminal developments reflect the new mood of the market in 1982.

The uprating of existing facilities continues while new development proposals suggest more modest capacities than at first planned. Some developments, inevitably have been shelved for reasons associated with permitting difficulties or until trade volumes expand again.

In Philadelphia, Conrail's Pier 124 sold to the Commonwealth of Pennsylvania on a leaseback arrangement is expected to complete expansion from 3 mta to 10 mta by late-1982.

Due to Alla Ohio's financial difficulties plans for a loader at Camden have been shelved and at Port Richmond CIBRO Petroleum has placed on hold its plans for a 5 mta terminal.

Of note, CIBRO attributes much of its difficulties to CSX which has refused to agree competitive export rates to Port Richmond from CSX origins on an interline basis with Conrail. Reports suggest that CIBRO was expecting to blend low sulphur CSX coal with high sulphur Pennsylvanian coal of Conrail origin to achieve export quality requirements.

More positively **Energy Terminals Inc.**, with principals including Elias Kulukundis and Dr. C. Y. Chen, is relying upon Conrail coal, mostly ex-Pennsylvania to provide the tonnage through its "newbuilding" coal loader on the site of an existing grain terminal at Port Richmond.

Indeed in the construction of coal loading facilities ETI will create a combined terminal with a maximum capacity in coal of some 3 mta, start-up is expected in July 1982.

The site is leased by the Farmer's Export Corporation from Conrail with part of the site sub-leased to ETI and work on preparation of a 200,000 ton storage area commenced in April and work is progressing on the conversion of an existing twin level conveyor gallery for coal handling.

The upper level is to be made fully air tight for coal operations and shiploading spouts will be installed.

Coal arriving by rail will be bottom dumped, stacked by a system of 1,500 t/h radial stackers and reclaimed from storage by an underground reclaim conveyor system.

With almost 40 ft of water on one side of the pier ETI expects to load Panamax carriers through one or two of five 24 inch diameter telescoping slewing chutes fed directly from the upper conveyor gallery. The terminal operator also believes it would be possible to accommodate large, part laden carriers at the terminal and top-off in the Delaware Bay should such requirements develop.

Indeed a number of projects have focused upon such operations in the Delaware Bay, notably those proposed by **National Bulk Carriers**.

Part of the Ludwig Organisation, the NBC proposals concern use of a 160,000 DWT vessel, the "**Cedros**", anchored in 60 ft of water off Big Stone Beach and served from river terminals by a fleet of self discharging barges. Also equipped with self unloading gear, the **Cedros** would then be able to load ocean vessels directly.

At the time of early investigation the project suggested a freight rate advantage of some \$6—7 ton but with the softening of the market NBC has decided, for the time being, to keep the **Cedros** in layup.

Plans by **Donn Development** to initiate a transshipment operation in the Delaware Bay have been dropped for other reasons.

The company's plans involved railing coal to Port Lewes Delaware and transferring to barge with floating, midstream-type derricks transshipping to ocean carriers but environmental objections brought the project down.

New York

Although coal shipments through New York are presently restricted in the main to the 1 mta operation of the Port Reading coal docks operated by Conrail for the Public Service Electric utility a number of proposals for new terminals exist.

According to development groups including the Port Authority of New York and New Jersey the potential advantage of moving export coal out of the harbour includes a distance advantage over other East Coast ports in serving particularly the European markets; the financial capacity to dredge main channels to 50 ft in the short term; ease of dredging; good connections to coal reserves via Conrail; and availability of potential terminal sites as well as a generally uncongested harbour area.

Development proposals include those by AEA but are fronted by the Port Authority of New York/New Jersey and the City of New York, Department of Ports and Terminals.

Proposals by the two public authorities arise out of a study prepared by ORBA Corporation in association with Parsons Brinckerhoff, Quade & Douglas which was commissioned in late-1980 and presented in June 1981.

In considering all parameters influencing the development of a coal export terminal in the harbour region the report recommended three potential sites at Port Jersey, Jersey City; Greenville, Jersey City; and at Stapleton on Staten Island.

In terms of conventional terminal development the study favoured the first two listed sites because of certain logistical and environmental difficulties which might be expected in development of a rail served loader on the east side of Staten Island.

The Port Authority of New York and New Jersey has subsequently concentrated its study efforts upon development of a conventional facility at either Port Jersey or Greenville whereas the City's Department of Ports and Terminals has now issued a request for proposals for private development of a loader on Staten Island served with coal via an eight-mile slurry pipeline from an existing railyard on the western side of the Island.

On the New Jersey side the Port Authority is continuing its assessment of the Port Jersey and Greenville sites and ORBA is proceeding with Phase 2 of the coal terminal development project with performance of design engineering and permitting work.

ORBA's work concerns the development of a 10 mta capacity facility at one of the two sites and development parameters and terminal specification are much the same for both sites. The major difference is that the layout of the Greenville site would require barge/ship unloading and carrier loading over a finger pier. Otherwise both terminals would expect to accommodate a loop track for unit trains, thaw shed, a tandem dumper, travelling stacker, underground reclaim and an overall materials handling capacity geared to load 200,000 tons within 60 hours.

In addition to coal export capacity the terminal would be equipped to discharge barges and coasters up to 30,000 DWT and load barges with coal for servicing the anticipated coal demands of New York area utilities such as Consolidated Edison.

Export coal through the facility would be originated mainly on Conrail lines (thus avoiding possible interline restrictions imposed by other carriers) in north-west Virginia, Pennsylvania and eastern Ohio and at full capacity the terminal would provide a major new revenue source for Conrail.

Of the two New Jersey sites opinion seems to favour Port Jersey simply because it is located further from residential property.

Meanwhile at Weehawken on the site of the former Seatrain container facility **AEA, American European Associates**, has achieved all permits except for city zoning for the development of a 3 mta, expanding to as much as a 10 mta, coal loader.

Assuming the final permit on the facility falls into place, which seems likely, the terminal is expected to be on-stream by July 1983. Designed by ORBA the terminal would have the eventual capacity to handle vessels drawing 50 ft at the terminal.

Layout shows a ladder track railcar handling system with bottom dump, storage of around 0.5 mt and a loadout rate of

some 7,500 t/h maximum utilising one of the existing three container gantries following conversion for coal loading.

The terminal is expected to handle both exports and domestic shipments (particularly to New England utilities) on behalf of its partners and third party shippers.

Rates for the movement of Conrail coal are said to have been agreed with the railroad.

North Carolina

Dry bulk exports, and some imports, through North Carolina ports are concentrated at Morehead City and Wilmington.

Movements through Morehead City have traditionally been dominated by exports of around 1 mta of phosphate from North Carolina deposits over a bulk loader commissioned in 1968 and in March 1981 coal export from the bulk loader were commenced by Alla Ohio Valley (AOV). In the period March to November the Southern Railway System hauled some 0.8 mt of coal to the multi-user facility until operations were suspended when AOV filed for Chapter 11 protection of the courts under the provisions of the United States Bankruptcy Act.

With a draught of 40 ft, berthing facilities include a 1,000 ft pier and a loader capable of serving vessels with a beam of 130 ft at rates up to 1,500 t/h. Panamax vessels to 60,000 tons may be handled although the largest vessels so far handled at the terminal have been approximately 50,000 DWT. The coal intake system comprises double bottom dump pit, mobile stockpiling conveyors serving a 180,000 ton storage area and front loader reclaim.

Under the terms of Chapter 11 a company is given time to reorganise financially and AOV has sought to return to its early role as coal trader/terminal operator by divesting itself of mining operations, coal washing plants etc. in Indiana, Western Virginia, Pennsylvania and Tennessee.

In early April the company was quietly confident that with the intake of fresh capital and new equity interests it would emerge successfully from Chapter 11 with coal shipments through the 2.5 mta Morehead City terminal recommencing shortly thereafter.

Of additional interest Gulf Interstate of Houston has proposed development of a 15 mta coal terminal on Radio Island and the general site area is also seen by the North Carolina Ports Authority as possible location for development of a major new grain terminal capable of servicing North Carolina's growing production in soya beans, corn and wheat estimated at 41, 134, and 14 million bushels respectively in 1981.

Further expansion of phosphate facilities to accommodate a throughput of as much as 5 mta is expected to commence at end-1982 for operation by 1984.

At Wilmington, general bulk movements comprise comparatively low volumes in salt, potash and other bulk but again a number of coal export facilities have been proposed.

The major project at Wilmington concerns the Williams Pipeline proposals to develop a 10—15 mta facility at the mouth of the Cape Fear River.

Ground storage with underground reclaim would be available for 1.5 mt and the terminal would be served by the CSX.

The philosophy of the terminal is to offer an export facility to

shippers unable to achieve priority loading at terminals developed by specific coal interests and Williams is confident that construction on the terminal will start towards the end of 1982 for commissioning in 1984.

Up stream of the Williams terminal the Atlantic-Salvesen Group reports to be continuing its studies for development of the American coal export terminal served by the CSX and early design engineering suggests a capacity of 3—4 mta with the 85 acre site offering a loop track for incoming trains.

South Carolina

Coal developments in the South Carolina Port of Charleston are concentrated around A.T. Massey's proposed conversion of an existing chemi-bulk import pier on the Shipyard river to serve coal exports. The terminal is scheduled to commence loading in earnest at end-1982/early-1983.

Connected by Seaboard to the CSX system and by the Southern to the Norfolk Southern, coal into the terminal would be bottom dumped and run into stock via a system of radial stackers and dozers.

Gravity reclaim through a tunnel system will feed coal to vessels at a loading rate of 2,500 t/h utilising the existing unloader which has been converted for shiploading operations.

All conveyor equipment is to be supplied by Long-Airdox and conceptual design and engineering on the project has been performed by ORBA.

Georgia Ports

Comprising the south Atlantic ports of Savannah and Brunswick, the Georgia Ports Authority has announced an aggressive new expansion programme which will centralise cargoes by type at a number of uprating or newbuilding terminal facilities, most notably at Colonel's Island, Brunswick.

By tradition Savannah has serviced GPA kaolin and grain export requirements but major traffic has been in the area of containers, ro-ro and breakbulk cargoes such as lumber.

For more efficient future handling, however, boxes, ro-ro traffic, grain and liquid bulk will be consolidated at the Garden City terminal and with breakbulk centralised at the Ocean terminal.

In terms of other dry bulk traffic, however, the GPA intends to concentrate operations at Brunswick handling breakbulk and dry cargo at its existing East River terminal and further dry cargo at its newbuilding Colonel's Island facility.

From a level of 0.3 mt of bulk traffic passing over the East River terminal last year dry cargo flow is expected to reach 0.6 mt this year and around 1.3 mta when the Colonel's Island terminal comes on-steam in 1984.

Since 1979 the GPA has invested more than \$ 7 million in developing facilities at the East River terminal with the most recent phase concluded towards end-1981 with the commissioning of a new Dravo, Sea Lion 40 type gantry designed for both grab bucket and hook work.

The new crane augments the recent addition of 60,000 ft² of covered bulk storage bringing total capacity to 110,000 ft² for 60,000 tons as well as a new conveying and bagging plant.

Of computer designed, modular construction the unloader offers a grab unloading rate of 700 t/h maximum and

through use of a simplified fleet-through reeving system may be changed swiftly to hook operation to a maximum lift of 15 tons.

Products through the facility include fertiliser, potash, mineral sand, corn gluten and animal feeds.

By far the major part of GPA's \$ 56 million investment in the multi-bulk facilities at Brunswick will, however, be concentrated in the development of its new complex on Colonel's Island.

The aim of the port authority is to develop the major multi-bulk terminal on the United States East Coast. Financing is now being arranged and a \$ 4 million dredging project to deepen the access channel from the East River to a depth of 30 ft at the berth is scheduled for completion by early-1984.

Commissioning of the terminal is scheduled to coincide with completion of the dredging and the terminal will be provided with 100,000 ft² of flat storage comprising nine bays each of 3,250 tons capacity, a bank of at least eight silos of 17,600 tons total capacity and equipped with base vibrators and special discharge devices for reclaim at 1,630 t/h.

Rail connection to the terminals are already in place with the facility accessing both CSX and Norfolk Southern.

Railcars arriving at the terminal will be discharged by two bottom dump pits at rates to 5,500 t/h and from storage material will be conveyed to a quayside loader of 65 ft outreach and rated capacity of 2,000 t/h.

Being a multi-product terminal the GPA stresses that major attention will be paid to product compatibility, belts will be reversible and dust collection and clean-up facilities will be maximised.

Significantly the port authority stresses that quayside equipment for import/export tonnage will be provided to handle dry bulk, breakbulk and containers. It will be remembered that ABC Container Lines box/bulk service presently calls at Savannah.

Products through the terminal will include mineral sands, kaolin, bauxite, agribulks etc.

Equipment orders are expected to commence from August 1982 and in addition to the \$ 29 million chemical plant already in place on Colonel's Island the Georgia Power Company has completed a \$ 1.7 million electricity supply project.

Lower Mississippi

In 1981 a number of trade factors combined to increase coal exports through the Lower Mississippi by a staggering 250% to 13.9 mt from 3.8 mt the previous year.

Such a growth trend emerged through the last quarter of 1980 and on the basis of this, enthusiastic proposals for eight newbuilding shoreside terminals emerged.

With the change in market conditions, coal exports are expected to fall back to ± 8 mta this year (still double the 1980 volume) but as a consequence all newbuilding terminal plans are on hold.

Convinced of the region's long-term role in U.S. exports, however, the short-term fall back has provided the Lower Mississippi coal export industry with the occasion to assess its future opportunities with regard to factors such as the establishment of competitive rail/water inland transporta-

tion rates; dredging of the river to 55 ft; demand for high sulphur coal; and, of course, world economic factors.

Coal Market

The single largest growth commodity for New Orleans and indeed the Lower Mississippi in 1981 was coal with metallurgical coal exports increasing from 1.8 mt to 3.6 mt and steam grades jumping from just under 2 mt to more than 10 mt.

The factors influencing such phenomenal growth were various, inter-related and mainly attributable to congestion at coal loaders on the U.S. East Coast, particularly at Hampton Roads and Baltimore.

In turn such congestion was influenced more by importers' fears over disruption to Polish and Australian supplies than any hard growth through economic expansion and/or increasing power station demands.

In searching for an alternative export centre to the East Coast, shippers considered options such as the Great Lakes/St. Lawrence seaway, and, more specifically, the Lower Mississippi.

The influx of material imposed a major strain on the region's two uprating shoreside terminals, Electro Coal and IMT, which both operated at capacity throughout the year. From mid year the Ryan-Walsh bulk terminal on the MRGO added valuable extra capacity, particularly in ground storage, but in the main 1981 volume increases were accommodated by the midstream, direct transfer rig operators.

Emphasising the flexibility of this system of dry bulk transfer, the midstreamers handled the majority of the additional cargo with existing cranes and without any detrimental impact upon other cargo volumes, notably in bi-products. The coal rush did, however, stimulate a number of new orders for manufacturers such as Clyde and Amhoist with a number of midstreamers expanding their handling potential particularly with coal in mind.

In addition, a large number of shoreside facilities were announced during the year, jointly proposing 72 mt of coal export capacity by approximately 1985 in addition to the expected capacity of 41 mta through existing facilities, on the assumption that 1981 heralded the start of a rapidly increasing exit of coal from the Lower Mississippi gateway (see Table 2).

Table 2: Existing and proposed shoreside coal terminals for the Lower Mississippi

Terminal	Mile Post	Developer	Status
Electro-Coal	55	TECO	25 mta 1983
IMT	57	IMT	12 mta end 1982
Ryan-Walsh	MRGO	Ryan-Walsh	4 mta late 1983
Freeport	39	Freeport Coal	4 mta on hold
Magnolia	46.6	Matex/Ingram	12 mta on hold
NOLA	47	Independent Interests	5 mta on hold
Citrus Lands	54	Italian Interests	6 mta on hold
Gateway	162	Peabody Holdings	13 mta on hold
Miller	174	Miller Coal	9 mta on hold
Hunt	204.5	Hunt International	15 mta on hold
River & Gulf	213.7	River & Gulf Transport	8 mta on hold

Response of terminal operating interests to the downturn in the coal export market, and its exaggerated impact on volumes through the Lower Mississippi, has been largely predictable.

Those most effected have been the developers of eight terminals which would have offered a total of 72 mta of new handling capacity by around 1985.

In terms of actual tonnage the group's hardest hit by the market slump have been the midstreamers who offered the flexibility to handle the east coast's overspill in the first place.

Here, midstream companies must rely once again upon products such as bi-products, ferro alloys etc., until the market recovers but general industry opinion is that midstreamers will continue to play a significant role on the lower Mississippi in terms of coal exports for reasons including low capital and operational costs.

As an extension of the concept at least one midstream operator is also considering the use of a rig moored close to the river bank with a crane feeding a conveyor link to a shoreside stockyard, in turn providing a buffer storage to reduce critical dependence on the timing of the barge ship arrivals.

Electro Coal

Situated at Mile Post 55 on the left descending bank of the river, Electro Coal increased its throughput capacity to more than 10 mta over phase 1 capacity of 5.5 mta comprising roughly 5.5 mta of coal for Tampa Electric, 2.5 mta of coal for domestic and export use and 0.5 mta of phosphate rock.

Original facilities at the terminal comprise a 1.2 mt stockyard served by a 4,000 t/h Dravo stacker reclaimer, a 3,000 t/h Dravo double ladder continuous barge unloader and a downstream wharf. Early coal loading was achieved by a fixed 3,000 t/h loading spout served direct by a reversible conveyor system from the stockyard and this loader option has been retained within the new complex although conveyor capacity has now been substantially uprated.

In expanding the capacity of the terminal to more than 10 mta, in March 1982 the terminal commissioned a new 6,000 short t/h IHI travelling loader with shuttle boom upon a new 600 ft upstream dock extension.

Further developments in this phase have included expansion of the stockyard capacity to 2.2 mt, bogie mounting of the 1,250 t/h gantry on the downstream dock and construction of various short conveyor links to ensure flexibility of material routing between berths and into and out of stock.

From completion of the expansion phase the Davant facility has proceeded immediately with a further expansion that will take capacity to 25 mta sometime in 1983.

Work underway comprises an additional 750 ft of dock linked at its upstream end by a new 6,000 t/h conveyor into a new-building coal storage pad. Served by a 6,000 t/h Krupp stacker/reclaimer with 180 ft boom the new yard will expand total storage capacity to around 5 mt. The dock is scheduled for completion in December 1982.

IMT

On schedule and within budget of \$55 million the MP57 International Marine Terminal will commission its Phase 2 expansion in December 1982 taking the throughput capacity



Fig. 3: Ryan-Walsh Bulk Terminal

of the terminal from 3.5 mta to 12 mta. Progress with the terminal expansion has been assisted by the softening in the market and work was also able to proceed apace between December 1981 and March 1982 when its existing loader capacity was down as a result of ship collision damage.

Existing facilities at the terminal include a 4,000 t/h fixed load spout served by approximately 3,000 t/h from a Dravo single ladder continuous barge unloader and at 1,000 t/h from stock over a 48 inch reversible conveyor.

Under the new development a new 72 inch conveyor system will link the stockyard with a new 1,000 ft dock served by a travelling, slewing and luffing IHI shiploader rated at 7,000 short t/h.

Double stockyard capacity will continue to be served by dozers used in the spreading and compaction of the coal but each yard, one upstream and the other downstream, of the shore/dock conveyor link will also be served by a 1,400 ft conveyor and a Krupp trench-type stacker/reclaimer of 6,000/4,600 t/h capacity with 46 ft boom.

Capacity through IMT in 1981 was 3.5 mt although through its unplanned outage the 1982 volume is expected to be just 2 to 2.5 mt before expanding through 1983.

Ryan-Walsh Bulk Terminal

Located on the Mississippi River Gulf Outlet (MRGO) the public bulk terminal was originally built by the Port of New Orleans in the mid 1960s and operated by them until 1975. From then until 1980 it was operated by an independent contractor and in early 1981 Ryan-Walsh took up a five year lease (see Fig. 3).

It would be fair to say that when Ryan-Walsh took over the facility it was not in the best of shape. Since re-opening in June 1981 a programme of complete plant refurbishment and, perhaps more importantly, strict maintenance procedures has been carried out.

Success so far has been manifested in a first year operational throughput of 1.6 mt and prospects for more than 2 mt through 1982/3. Underlining its confidence in the plant Ryan-Walsh has also announced its probable intention of exercising a second five year lease option on the facility.

At the waterside, the terminal has an 1,800 ft dock with 36 ft of water capable of handling vessels fully laden in excess of 50,000 DWT. To the rear of the berth is an area with a 14 ft depth for barge handling. Fleeting is available for approximately 70 barges and much of the terminal's fleeting operations are performed by Compass Dockside.

Quayside equipment includes two 1,200 t/h grab unloaders with buckets up to 19 yd³ capacity each with an air draught of 55 ft and working outreach of 100 ft.

With shuttle arm a 2,000 t/h Alliance shiploader has a working outreach of 75 ft. Reversible conveyor from the dock is rated at 2,000 t/h and within a matter of months Ryan-Walsh expects to install a new 60 inch dockside conveyor also rated at 2,000 t/h which will then permit the terminal to load and discharge simultaneously.

Installation of the new conveyor is expected to coincide with the construction of a 1,400 ft reversible yard conveyor extension. In terms of storage, an existing yard conveyor with tripper stacks material such as barytes close to the main terminal complex while coal is piled at the farthest point of the conveyor and transferred for stockpiling and compaction by mobile equipment. A system of special reclaim hoppers will accompany the planned yard belt extension and total ground storage capacity presently exceeds 200,000 tonnes.

Further storage capacity includes 10 x 2,500 tonnes capacity storage silos for products such as andalusite, petroleum cokes and coal etc. A truly multi-product bulk terminal, ferro chrome, manganese and similar products are also handled at the facility and additional storage capacity has recently been developed for such products.

With marshalling facilities for 250 cars the bulk terminal is at present the only multi-purpose terminal on the river to be served by railroad and links with the main port marshalling yards through the Public Belt railroad.

At start-up Ryan-Walsh completely refurbished a flooded rail car dump and has been involved in transferring several unit train shipments of Illinois basin coal destined for Mediterranean users from ICG railcars to ship.

Ryan-Walsh has refurbished and now operates the terminal's

two switching engines and its most recent project in addition to the storage yard conveyor extension involves the refurbishment of the 2,000 t/h railcar load out system — work that will involve extensive repair of the car weighing system.

Ryan-Walsh remains the only stevedore in the area operating both landbased and midstream facilities and in a recent combination loaded the 81,157 DWT "Höegh Favour" with 55,000 tonnes of coal at the bulk terminal before the vessel moved round to Mile Post 40 on the river for topping off by Ryan-Walsh midstream rigs.

Terminals on hold

Perhaps one of the most surprising announcements in terms of new terminal development proposals came from the Magnolia Coal Terminal in June this year when it was announced that the partners, International Matex and Ingram Industries were no longer pursuing the project.

With site clearance and permitting completed, equipment etc. on order, the developers were ready to construct. The only missing link according to International Matex was solid commitment from end-users.

At a cost of approximately \$70 million the terminal was originally scheduled to be on-stream in 1983 comprising a 900 ft berth capable of accommodating vessels in excess of 120,000 DWT and loading them at an average of 50,000 tons in 18 hours.

A 4,500 t/h continuous barge unloader had been ordered from FMC and likewise two stacker/reclaimers rated at 4,500/5,500 t/h, a 4,500 t/h stacker and a shiploader had been ordered from Sumitomo in Japan. While orders for such equipment have been cancelled a spark of hope remains for the development of the Magnolia facility in as much as the partners may be willing to sell the terminal development package to another developer or, possibly, enter into a joint venture.

Further upstream at **Hunt's** MP 204.5 Granada site letters of intent on equipment for a 3,000 t/h FMC continuous barge unloader, a Dravo-Wellman car dumper and a 4,500 t/h Fairfield stacker/reclaimer have also been withdrawn, with the facility officially on hold as a result of the downturn in coal exports.

This latest disruption to the \$100 million project to commission the coal terminal by April 1983 follows earlier problems associated with terminal design which saw the developer replace the original consultant with David Volkert and Associates, the company responsible for the design of Mobile's booming McDuffie facility.

Permitting on the site has been completed but the developer does not intend to redesign the layout until the coal market direction can be assessed more clearly.

With plans to construct a combined import/export facility with an early annual throughput of capacity of 8 mta, U.S. Steel Subsidiary **River and Gulf Transportation** has announced that it only intends to proceed with the Mile Post 213.7 facility once firm user commitments have been made, sufficient to provide the terminal with base-load traffic.

Costing some \$100 million, original design suggests grab unloaders for discharge of minerals, two 5,500 t/h continuous barge unloaders, a linear-type ship loader and a variety of mobile reclaim equipment. An early throughput of 4

to 5 mta import and export was originally favoured for the facility with eventual expansion of the terminal to 18 mta.

A subsidiary of Peabody Holdings Inc. and a sister to Peabody Coal the **Gateway Terminal** at MP 162 originally scheduled to commission as much as 13 mt of capacity in 1984 is another facility on hold.

In common with others the Gateway developer is unwilling to proceed without firm commitments as to use; such commitment being hard to come by in a soft market.

The developer, however, stresses its confidence in the long-term future of the Lower Mississippi as shippers continue to diversify supply routes.

Construction of the facility has been estimated at \$100 million and early marine design work was carried out by R. S. Fling and Partners.

Still committed to the broad concept of developing a coal handling facility at MP 174, **Miller Coal Systems** is another company to have placed its project on hold until a clear picture of demand emerges.

Originally scheduled for operation by 1984 with a capacity of 9 mta expanding to 23 mta, Miller has all permits in hand and believes a terminal could be under construction within four months of any decision being taken to proceed. Terminal development in conjunction with French interests has been discussed.

Of several other proposals **Freeport Minerals** plan to convert an existing sulphur loading berth at MP 39 to a coal facility was suspended sometime ago. Early suggestions were that the terminal would be on-stream through 1982.

Permitting for the 5 mta capacity **NOLA** facility at MP 47 is presently on hold although all permits are in hand. Development interests will review at the end of 1982 whether they intend to retain their land lease option.

At MP 54 the **Citrus Lands** project to construct a 6 mta terminal by late 1983 is also fully permitted but only preliminary engineering design had been carried out prior to the project being placed on hold.

Mobile, Alabama

In sharp contrast to the volumes of coal passing through the Lower Mississippi, 1982 is proving to be a record year for Mobile's **McDuffie Terminal**.

Opened in 1976, McDuffie steadily increased its tonnage to 5.3 mt by 1980. Phase II of the terminal's expansion added a second Hitachi stacker/reclaimer, a second barge unloader and a loop track for railwagons and effectively doubled the terminal's capacity from mid-1981 by permitting the terminal to load into and out of stock simultaneously. Throughput in 1981 thus increased to 6.4 mt and is expected to exceed 10 mt this year prior to a further doubling of capacity to 20 mta in the first quarter of 1983 when completion of Phase III expansion will add a third stacker/reclaimer, a second rail loop, a double rail car dumper, a third barge unloader and a second shiploader of Krupp design with 7,000 t/h load out capacity over a shuttle boom.

All expansion phases of McDuffie have been designed by David Volkert & Associates of Mobile, AL.

In terms of throughput, McDuffie's performance is attributable, according to the Alabama State Docks (ASD), to its success in developing long term contracts for the shipment of metallurgical coal since opening of the facility.