AUSTRALIA

WATERLINE

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BUREAU OF TRANSPORT ECONOMICS

IN BRIEF

Stevedoring productivity

This edition of *Waterline* contains the March quarter 1998 container stevedoring productivity indicators, which coincide with the period immediately prior to the recent waterfront dispute involving Patrick stevedoring operations.

Beginning in this issue, the stevedoring productivity charts (figures 1 to 6) reflect the *containers per hour* data (table 1) rather than the *teus per hour* data (table 8). In addition, table 1 has been expanded to include ship visit and container throughput data, as well as the *elapsed time not worked* indicator.

The March quarter five-port average stevedoring indicators show no significant change from the December quarter 1997. On a port by port basis, only Sydney and Adelaide showed notable changes in stevedoring productivity. In Sydney all three productivity indicators fell by a significant amount, with the elapsed and net rates falling by 2 containers per hour. In Adelaide all three productivity indicators improved by a small amount.

Container ship visits and container throughput decreased for all five ports in the March quarter 1998 (down 5.6 and 9.7 per cent respectively for the five-port total compared with the previous quarter). However, there was an overall increase in the number of ship visits compared with the same quarter in 1997 (5 per cent); this increase was due mainly to a large rise in ship visits in Melbourne (up 20 per cent). All five ports experienced an increase in container throughput in the March quarter 1998 compared with the same quarter in 1997, resulting in a 17.9 per cent increase in the five-port total. **Go to.**

Waterfront reliability

Berth availability within four hours of the scheduled time rose to 88 per cent in the March quarter 1998, from 84 per cent in the December quarter 1997. Availability of pilots and tugs within one hour of the confirmed time was 100 per cent, the same as the figure in the previous quarter.

The proportion of ship calls affected by other waiting time incidents increased to 51 per cent in the March quarter, from 41 per cent in the December quarter.

The available data indicate that there was significant inter-port variation in aspects of stevedoring reliability in the March quarter. Ship arrival advice provided inside the 24 hours prior to actual arrival was more accurate, and less variable between ports, than advice provided up to the 24 hour point. **Go to.**

Monitoring BSPVES

This article provides an overview of the 1998 report, *Bass Strait Passenger Vehicle Equalisation Scheme: BTCE Monitoring Report Number 1.* The report is the first review of the Bass Strait Passenger Vehicle Equalisation Scheme by the Bureau, as required by the Ministerial Directions under which the Scheme operates.

Since the report only covered the first 10 months of the Scheme's operation (1 September 1996 to 30 June 1997) it was too early to draw any firm conclusions about the effectiveness of the Scheme. Nevertheless, the report found that there was little doubt that the introduction of the Scheme had contributed to the improved financial performance of TTLine, notwithstanding that TTLine may have passed on some of the indirect benefits it derived from the Scheme through increased discounting during the off peak season. **Go to.**

Crew to berth ratios

The BTE monitors crew to berth ratios for Australian merchant and offshore shipping on a quarterly basis. The crew to berth ratio is defined as the number of seafarer days paid over a period of time, divided by the number of berth days the ship(s) operated.

The crew to berth ratio for merchant shipping was 2.104 (preliminary) in the March quarter 1998, compared with 2.123 in the December quarter 1997, and below the initial level of 2.133 in the September quarter 1993.

The crew to berth ratio for offshore shipping was 2.337 (preliminary) in the March quarter 1998, compared with 2.334 in the December quarter 1997, and the initial March quarter 1995 level of 2.327. **Go to.**

BTEAGAIN

The more things change…

Since the last issue of *Waterline* the communications function of the former Bureau of Transport and Communications Economics has been transferred to the Department of Communications and the Arts. Consequently, the BTCE has been renamed the Bureau of Transport Economics (BTE). This administrative change has not affected the Bureau's normal transport research activities. **Go to.**

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STEVEDORING PRODUCTIVITY

Table 1 and figures 1 to 6 present the December 1995 to March 1998 indicators of stevedoring productivity for the major Australian container terminals, expressed in *container moves per hour.* The data for Brisbane, Sydney, Melbourne and Fremantle are averages for the major terminals operated by P&O Ports and Patrick. The Adelaide data cover the SeaLand terminal.

Please note that:

- the March quarter 1998 data reflect the period before the recent industrial dispute involving Patrick.
- because of the absence of Fremantle elapsed rate data from one operator, the five-port average elapsed rate cannot be calculated for the March quarter and thus the average published here is only for four ports. However, given that the five-port average is dominated by Melbourne and Sydney, the provisional five-port average is a reasonable approximation.
- as the net rate data for Brisbane, Sydney, Melbourne and Fremantle for one operator have not been finalised for the March quarter, the associated net rates are provisional at this stage.

Overall national stevedoring productivity, as measured by the five-port average, did not change significantly in the March quarter 1998 as compared with the December quarter 1997:

- the five-port average *crane rate* (productivity *per crane* while the ship is worked) was 18.8 containers per hour compared with 18.5 in the December quarter;
- the five-port average *elapsed rate* (productivity *per ship* based on the time labour is aboard the ship) is not comparable with the previous quarter in the absence of a complete set of data for Fremantle; and
- the five-port average *net rate* (productivity *per ship* while the ship is worked) was 23.7 containers per hour (provisional) compared with 24.3 containers per hour in the December quarter.

Brisbane average crane rates were 18.0 containers per hour in the March quarter, up from 16.8 in the December quarter. The elapsed rate of 16.4 containers per hour, and the net rate of 19.3 containers per hour (provisional) were not significantly different from the December quarter rates. Consequently, there was little change in the average proportion of elapsed time not worked. The March quarter container exchange was 15.2 per cent down on the December quarter figure, but up 20.9 per cent compared with the March quarter 1997.

Sydney average crane rates were 17.5 containers per hour in the March quarter, down from 18.4 in the December quarter. The March quarter elapsed and net rates were 19.9 containers per hour and 25.7 (provisional) containers per hour, down significantly from the previous quarter (21.9 and 27.7, respectively). The average proportion of elapsed time not worked was 22.5 per cent (provisional) in the March quarter. The March quarter container exchange was 12.6 per cent down on the December quarter figure, but up 9 per cent compared with the March quarter 1997.

Melbourne average crane rates were 19.5 containers per hour in the March quarter, up from 18.8 in the December quarter. The elapsed rate of 20.1 containers per hour and the net rate of 22.8 containers per hour (provisional) did not change significantly from the previous quarter, resulting in a similar proportion of elapsed time not worked. The March quarter container exchange was 6.7 per cent down on the December quarter figure, but up 27.5 per cent compared with the March quarter 1997.

Adelaide average crane rates were 22.5 containers per hour in the March quarter, up from 21.4 in the December quarter. This continues the trend of gradual improvement in Adelaide stevedoring productivity, resulting in an overall increase of 20 per cent since the December quarter 1995. While Melbourne and Fremantle have had improvements of similar magnitude, both started from a lower base. The Adelaide elapsed rate of 29.6 containers per hour and the net rate of 30.7 containers per hour were both up marginally on the December quarter rates. The average proportion of elapsed time not worked was 3.6 per cent in the March quarter, a small rise on the 3 per cent for the previous quarter. The March quarter container exchange was 12.6 per cent down on the December quarter figure but up 3.9 per cent compared to the March quarter 1997.

Fremantle average crane rates were 19.6 containers per hour in the March quarter, up from 18.9 containers per hour in the December quarter. The elapsed data for March have not yet been received from one operator and therefore no indicator has been produced for this quarter. The net rate of 22.8 containers per hour (provisional) was down slightly on the December quarter rates. The March quarter container

exchange was 4 per cent down on the December quarter figure, but up 17.7 per cent compared with the March quarter 1997.

Teus per hour

Table 8 presents the stevedoring productivity indicators in terms of teus per hour. These data are retained in *Waterline* for the purposes of long-term historical comparison and are not directly comparable with the data in table 1. This is because indicators based on teus per hour may be affected, from one period to the next, by changes in the mix of 20 foot and 40 foot containers. Nevertheless, in the March quarter 1998 the teu-based and container based data generally reflected similar movements in productivity.

Container port activity

Table 1 also provides information on container ship visits and container throughput at each of the five mainland capital city ports. Compared with the previous quarter, in the March quarter 1998 there were decreases in both the number of container ship visits and container throughput for all five-ports (down 5.6 and 9.7 per cent, respectively, for the five-port total). However, there was an overall increase in the number of ship visits compared with the same quarter in 1997 (5.1 per cent); this increase was due mainly to a large rise in ship visits in Melbourne (up 20 per cent). All five ports experienced an increase in container throughput in the March quarter 1998 compared with the same quarter in 1997, resulting in a 17.9 per cent increase in the five-port total.

WATERFRONT RELIABILITY

The *Waterline* reliability indicators provide partial measures of the variability of waterfront performance for container traffic at major Australian ports.

Berth availability, pilotage, towage

Table 2 presents information on berth availability, pilotage and towage for a sample of ship calls in the March quarter 1998. It indicates the extent to which selected port services were available at the scheduled or confirmed time.

The sample for the March quarter covers 268 ship calls, equivalent to almost 30 per cent of total ship calls at the major container terminals during the period. The proportion of ship calls covered at individual ports ranges from 22 per cent at Brisbane to 40 per cent at Adelaide.

The *berth availability* indicator measures the proportion of ship arrivals where a berth is available within four hours of the scheduled berthing time. Berth availability for the sample of ship calls was 88 per cent in the March quarter 1998, up from 84 per cent in the December quarter 1997. The indicator ranged between 89 per cent and 92 per cent in the first three quarters of 1997, the earliest periods for which data are available.

The increase in berth availability between the December quarter 1997 and the March quarter 1998 mainly reflected improvements at Melbourne and Fremantle. Caution should be used in undertaking inter-port comparisons of berth availability, as there is significant variation between ports in sample sizes and ship call patterns.

The *pilotage and towage* indicators reported in Waterline measure the proportion of ship movements where the service is available to the ship within one hour of the confirmed ship arrival/departure time. The proportions were 100 per cent in the March quarter, the same as the figures in the December quarter. The pilotage and towage indicators were also at or close to 100 per cent in the first three quarters of 1997.

Other waiting time

The ten shipping lines that supplied information for table 2 also provided data on other ship waiting time. This category incorporates waiting time that is attributable to factors other than the unavailability of a berth, pilot or towage service at the scheduled/confirmed time. The data on other ship waiting time reported in Waterline exclude ship schedule adjustments (instances where the shipping line holds the ship off the port or at the berth in order to maintain the fixed-day schedule).

In the March quarter, 51 per cent of ship calls in the sample were affected by other waiting time incidents that had a duration of at least one hour. This was significantly higher than the proportion of 41 per cent recorded in the previous quarter. The increase in other waiting time over this period mainly reflected rises in the number of incidents involving early ship arrival, pilot/tug booking times, early completion of stevedoring and weather/tides. The proportion of ship calls affected by other waiting time ranged from 28 per cent to 66 per cent at individual ports in the March quarter.

Table 3 summarises the data on other ship waiting time incidents. The shipping lines identified a total of 176 incidents (affecting 136 ship calls) for the sample of ship calls in the March quarter. One-quarter of the ship calls that incurred other waiting time were affected by two or more incidents.

The total waiting time attributable to particular incident types reflects the number of incidents and the waiting time associated with individual incidents. In the March quarter, five incident types accounted for around two-thirds of the total hours attributable to other ship waiting time:

- Ship arrived early (16.2 per cent);
- Stevedoring finished late (14.0 per cent);
- Industrial action (13.7 per cent);
- Awaiting labour (13.2 per cent);
- Closed port–holidays (10.4 per cent).

Around 58 per cent of the waiting time incidents (51 per cent of waiting time) in the March quarter directly involved waterfront services (mainly items 2 to 5, 7 and 8 in table 3). Another 27 per cent of incidents (32 per cent of waiting time) directly involved ship operations (mainly early/late ship arrival and repairs/maintenance). It is not possible to accurately identify the causes of other waiting time in all instances. For example, late ship arrival may be attributable to slow stevedoring in the previous port, problems with the ship's engines, bad weather or a combination of factors.

The data in table 3 indicate that, for around 6 per cent of ship calls, pilots or tugs could not be booked at the preferred time. As noted in *Waterline* 14, unavailability of a booking at the preferred time for some ship calls may reflect a reasonable trade-off between towage charges (price) and service availability (quality).

Stevedoring

Table 4 presents the available information on three aspects of stevedoring reliability at the major container terminals — stevedoring completion, stevedoring rate and cargo receival. March quarter data are not available for Fremantle due to upgrading work on one terminal operator's information system.

Stevedoring completion provides a partial indicator of the accuracy with which stevedoring time is predicted. It is defined as the proportion of ship visits where stevedoring completion time is within one hour (plus or minus) of the time initially agreed when the overall work program for the ship is prepared. The available data, which are currently limited to Brisbane and Sydney, suggest that stevedoring completion varied significantly between the two ports in both the December and March quarters.

Stevedoring rate provides a partial indicator of the variability of stevedoring productivity at each port. It is defined as the proportion of ship visits where the average crane rate for the ship is within two containers per hour (plus or minus) of the quarterly average crane rate for the terminal. The stevedoring rate indicator ranged from 48 per cent to 63 per cent at the three ports for which data are available for the March quarter. This was similar to the range in the December quarter. Factors which potentially affect the stevedoring rate indicator include the mix of ships handled at each port, typical cargo stowage patterns on the ships and operating practices at the terminals.

Cargo receival is the proportion of receivals (exports) completed by the stevedore's cut-off time. It provides a partial indicator of one factor that can affect container terminal performance. In the March quarter the cargo receival indicator ranged between 82 per cent and 93 per cent at the three ports for which data are available.

Ship arrival

Table 4 includes data for two indicators of ship arrival advice. The accuracy of this advice potentially

affects the ability of waterfront operators to provide services at the times required by shipping lines.

The first indicator of ship arrival advice is the proportion of ship arrivals within one hour (plus or minus) of the most recently advised arrival time available to the port authority/corporation *at 24 hours prior to actual arrival*. The proportion at the four ports for which data are available ranged between 43 per cent and 60 per cent in the March quarter. The relatively low figure for Adelaide is reportedly attributable to industrial issues at other ports.

The second indicator is the proportion of ship arrivals within one hour (plus or minus) of the last scheduled arrival time *advised inside the 24 hours prior to actual arrival* . The proportion at the four ports for which data are available ranged between 91 per cent and 94 per cent in the March quarter.

Concluding comments

Berth availability increased to 88 per cent in the March quarter. The availability of pilots and tugs at the confirmed time remained at 100 per cent. The overall proportion of ship calls affected by other waiting time increased to 51 per cent, from 41 per cent in the previous quarter. The available data indicate significant inter-port variation in aspects of stevedoring reliability in the March quarter. Ship arrival advice provided inside the 24 hours prior to actual arrival was more accurate, and less variable between ports, than advice provided up to the 24 hour point.

REVIEW OF THE BASS STRAIT PASSENGER VEHICLE EQUALISATION SCHEME

This article provides an overview of 1998 report *Bass Strait Passenger Vehicle Equalisation Scheme: BTCE Monitoring Report Number 1* . Copies of the full report can be obtained by contacting the BTE.

Introduction

In August 1996, the then Commonwealth Minister for Transport and Regional Development announced the introduction of the Bass Strait Passenger Vehicle Equalisation Scheme (the Scheme), effective from 1 September 1996. The Scheme provides a rebate against the fare charged by a ferry operator to transport an eligible passenger vehicle plus driver by sea across Bass Strait, and gives effect to the Government's election commitment to provide a rebate of up to $300 for a return trip.

The Scheme operates under a set of Ministerial Directions and is administered by the Commonwealth's Tasmanian Assistance Team in Hobart. Although the Scheme was originally overseen by the Department of Transport and Regional Development's (DoTRD) Maritime Division, new administrative arrangements in October 1997 resulted in the maritime functions of DoTRD being transferred to the Department of Workplace Relations and Small Business. Since then a new set of Directions has been approved by the Minister for Workplace Relations and Small Business.

Monitoring of the effectiveness of the scheme

Clause 16 of the Directions provides for the annual monitoring of the effectiveness of the Scheme by the BTE. The report argues that the effectiveness of the Scheme would depend on:

- the extent to which eligible passengers benefited from lower net fares;
- changes in eligible passenger demand, and in the demand of those accompanying eligible passengers, as a result of lower net fares;
- changes in unit operating costs to the service operator and the degree to which any savings are passed on to all passengers through lower gross fares; and
- the resulting change in total demand for passengers travelling across Bass Strait, including travel by air, and the origin of this traffic.

The report is the first to be undertaken, and covers only the first 10 months of the Scheme's operation (1 September 1996 to 30 June 1997), and so provides only an initial indication of the overall effectiveness of the Scheme.

Calculation of the rebate

The rebate is calculated on the basis of charging a net fare for an eligible passenger vehicle plus driver, travelling in standard share cabin accommodation, that is comparable to the notional cost of driving an equivalent distance on a highway.

The equivalent highway cost is based upon the sea distance of 427 kilometres between the ports of Devonport and Melbourne multiplied by an estimated running cost for an average family car (39.87 cents per kilometre). This provides an equivalent highway cost of $170 for a one-way trip.

For the purposes of the rebate calculation, the fare for an 'inside cabin' on the *Spirit of Tasmania* is used as the passenger fare benchmark. This accommodation represents approximately 50 per cent of the berths available on the *Spirit of Tasmania*. The benchmark passenger vehicle fare has been based on the fare for a passenger vehicle of no more than five metres in length.

Due to the seasonal nature of demand, both the passenger and vehicle fares vary according to three seasons (high, shoulder and off peak seasons). Consequently, the rebate varies, with the largest rebate being applied during the high season and smallest rebate being applied during the off season, to provide an approximation of the equivalent highway cost across all seasons. The rebates applied during the monitoring period are provided in table 5.

Method of payment

The rebate is an 'up front' subsidy. That is, the rebate is provided to the driver of an eligible passenger vehicle as a reduction in the fare charged by the service operator. The onus is on the service operator to determine the eligibility of the passenger for the rebate, apply the rebate to the passenger's gross fare, and claim reimbursement of the rebate from the Commonwealth.

Funding for the scheme is demand-driven, and it changes to match the actual level of eligible passenger vehicle travel undertaken. Funding for 1996/97 was originally estimated at $7.5m based upon the carriage of an estimated 68 000 passenger vehicles during the first 10 months of the Scheme's operation. A total of nearly $8.5m in rebates was paid during 1996/97 in respect of the carriage of 73 360 passenger vehicles. Funding for 1997/98 was further increased to $10.9m in the 1997/98 Budget in respect of the carriage of some 93 000 passenger vehicles. With increased demand on the *Spirit of Tasmania* and TT Line providing an additional daily service during the 1997/98 peak season using Incat's *Devil Cat*, the approved funding for 1997/98 was increased to $12.8m in respect of the carriage of some 113 000 passenger vehicles.

New operators

The Scheme does not discriminate between service operators. Should a new operator enter the Bass Strait passenger trade, the Scheme applies to its passengers on the same basis as those of existing service operators. That is, the rebate applicable to each season, and the dates of the seasons, remain unchanged for any new operator. This arrangement is intended to provide some certainty in the marketplace as to how the Scheme will apply.

Payment made under the scheme

During the monitoring period, there were two operators carrying passengers and their vehicles between Tasmania and the mainland: TT Line with the *Spirit of Tasmania*; and Southern Shipping with the much smaller ferry *Matthew Flinders*. The *Spirit of Tasmania* operates between Devonport and Melbourne, while the *Matthew Flinders* operates services between Bridport (Tasmania) and Welshpool (Victoria) via Flinders and Deal Islands. Since eligible passengers using Southern Shipping received rebates totalling only $1080 over the monitoring period, the BTE report focused on the operations of TT Line.

For the period September 1996 to June 1997, $8.47 million was paid by the Commonwealth to TT Line, for 73 360 eligible passenger vehicles. Of these vehicles, the vast majority (95 per cent) were motor cars, 4.5 per cent were motor cycles and less than one per cent were buses.

The effectiveness of the scheme

A discussion regarding the effectiveness of the Scheme is contained within the report. In conclusion, though, the monitoring report found that, due to the limited period over which the Scheme had operated, it was too early to draw any firm conclusions about the effectiveness of the Bass Strait Passenger V ehicle Equalisation Scheme. Nevertheless, the following points were worth mentioning:

- there has been an increase in total traffic on the *Spirit of Tasmania* since the commencement of the Scheme;
- load factors (per voyage) increased, resulting in lower unit costs for TT Line; and
- unit passenger revenues remained roughly unchanged, while unit vehicle revenues increased by 5.5 per cent.

The report found that there was little doubt that the introduction of the Scheme had contributed to the improved financial performance of TT Line, notwithstanding that TT Line may have passed on some of the indirect benefits it derived from the Scheme through increased discounting during the off peak season.

Postscript

It does seem that the increase in demand has been sustained beyond the 1996/97 monitoring period. During the scheduled dry docking of the *Spirit of Tasmania*, the ferry *Incat 045* operated between 13 July and 27 July 1997 (inclusive). This service enabled TT Line to trial the potential use of a high-speed catamaran, resulting in TT Line's decision to provide a high-speed service over the peak 1997/98 period, and its intention to do so again in the 1998/99 peak season.

CREW TO BERTH RATIOS

The BTE monitors crew to berth ratios for Australian merchant and offshore shipping on a quarterly basis. The crew to berth ratio is defined as the number of seafarer days paid over a period of time, divided by the number of berth days the ship(s) operated. Berth days operated is defined as the sum, over the period, of the number of people required each day by the relevant statutory authority and the ship operator to carry out the work of the ship(s) in a safe and efficient manner.

Merchant shipping

Figure 7 presents information on the crew to berth ratio, and its components, for Australian merchant shipping. As the BTE is still auditing the data, the March quarter 1998 merchant shipping data in this issue of *Waterline* are classified as preliminary.

The *crew to berth ratio* for merchant shipping was 2.104 in the March quarter, compared with 2.123 in the December 1997 quarter, and below the initial level of 2.133 in the September quarter 1993.

Table 6 shows the individual components of the crew to berth ratio for merchant shipping, by crew classification, for the March quarter. *Ship time* is the largest component of the crew to berth ratio for merchant shipping, and reflects days paid for ship duty (which may include travelling time and days signing on and off). The ship time ratio was 1.032 in the March quarter, compared with 1.028 in the previous quarter.

Accrued leave gives effect to leave with pay for weekends and public holidays worked, annual leave with pay of five weeks per annum, sick leave, compassionate leave and leave in lieu of a 35 hour week. The accrued leave ratio was 0.958 in the March quarter, compared with 0.962 in the December quarter.

Other changes in the components of the merchant shipping crew to berth ratio were:

- *Compensation leave* fell to 0.055 in the March quarter, from 0.062 in the previous quarter;
- *Study leave* fell to 0.018 in the March quarter, down from 0.027 in the previous quarter; and
- *Training and other paid leave* was 0.007 in the March quarter, compared with 0.009 in the December quarter 1997.
- *The long service leave ratio* for merchant shipping in the March quarter was 0.034, a reduction of 0.001 from the previous quarter.

Offshore shipping

Figure 8 presents information on the crew to berth ratio, and its components, for Australian of fshore shipping. As the BTE is still auditing the data, the March quarter 1998 offshore shipping data in this issue of *Waterline* are classified as preliminary.

The crew to berth ratio for offshore shipping was 2.337 in the March quarter, compared with 2.334 in the December quarter 1997, and the initial March quarter 1995 level of 2.327.

Table 7 shows the individual components of the crew to berth ratio for offshore shipping, by crew classification, for the December quarter. *Accrued leave* is the largest component of the crew to berth ratio for offshore shipping, and comprises paid leave to compensate for work on public holidays, intervals of leave associated with the two crew duty system, annual leave and time spent travelling in off-duty time. The accrued leave ratio for the March quarter was 1.147, compared with 1.151 in the December quarter 1997.

Ship time also represents a significant part of the offshore crew to berth ratio, and reflects days paid for ship duty (which may include travelling time and days signing on and off). The ship time ratio for the March quarter was 1.028, compared with 1.016 in the previous quarter.

Other components of the offshore crew to berth ratio were:

- *Compensation leave*, which rose to 0.110, from 0.097 in the previous quarter;
- *Long service leave*, which remained at 0.038;
- *Study leave*, which fell to 0.011, from 0.031 in the previous quarter; and
- *Training and other paid leave*, which rose to 0.004, from the previous quarter's 0.000.

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FIGURES

CONTAINER TERMINAL PERFORMANCE—CONTAINERS PER HOUR

FIGURE 1 FIVE MAJOR PORTS

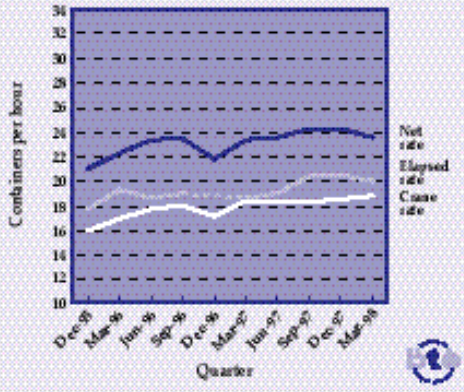


FIGURE 2 BRISBANE

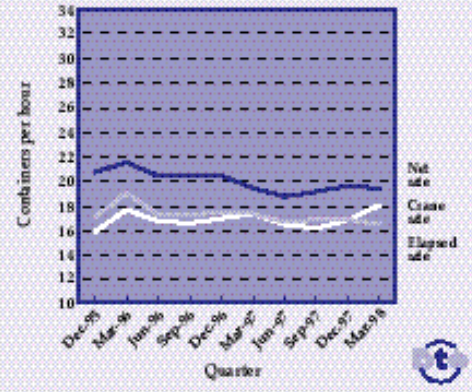


FIGURE 3 SYDNEY

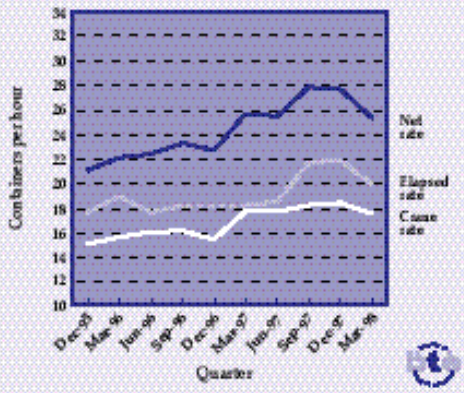


FIGURE 4 MELBOURNE

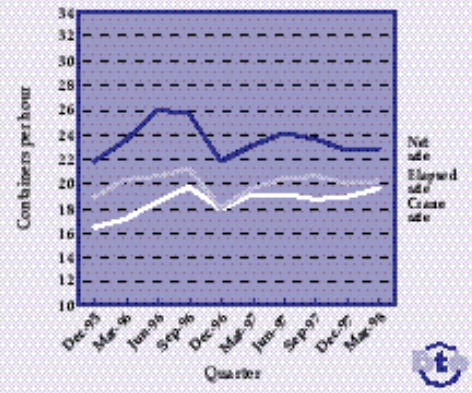


FIGURE 5 ADELAIDE

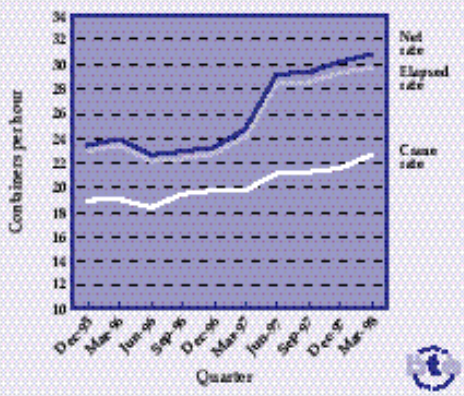
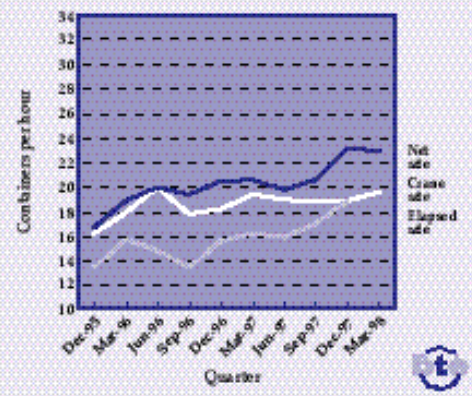


FIGURE 6 FREMANTLE



Note *Elapsed rates and net rates from the March quarter 1997 onwards are not directly comparable with earlier figures (except at Adelaide) due to changes in a terminal operator's information systems.*

Sources *Patrick, P&O Ports and SeaLand.*

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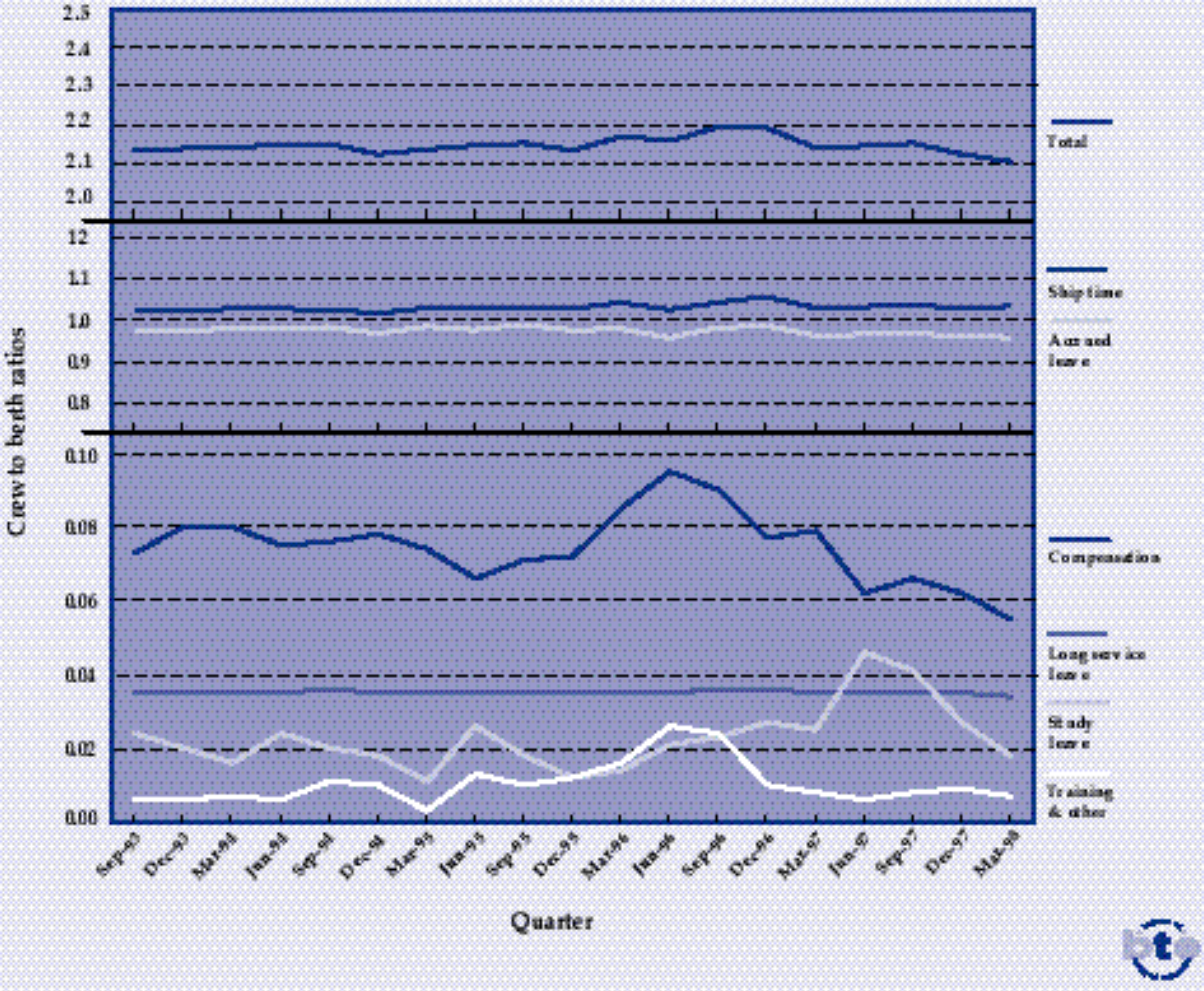
FIGURES

FIGURE 7 CREW TO BERTH RATIOS—AUSTRALIAN MERCHANT SHIPPING



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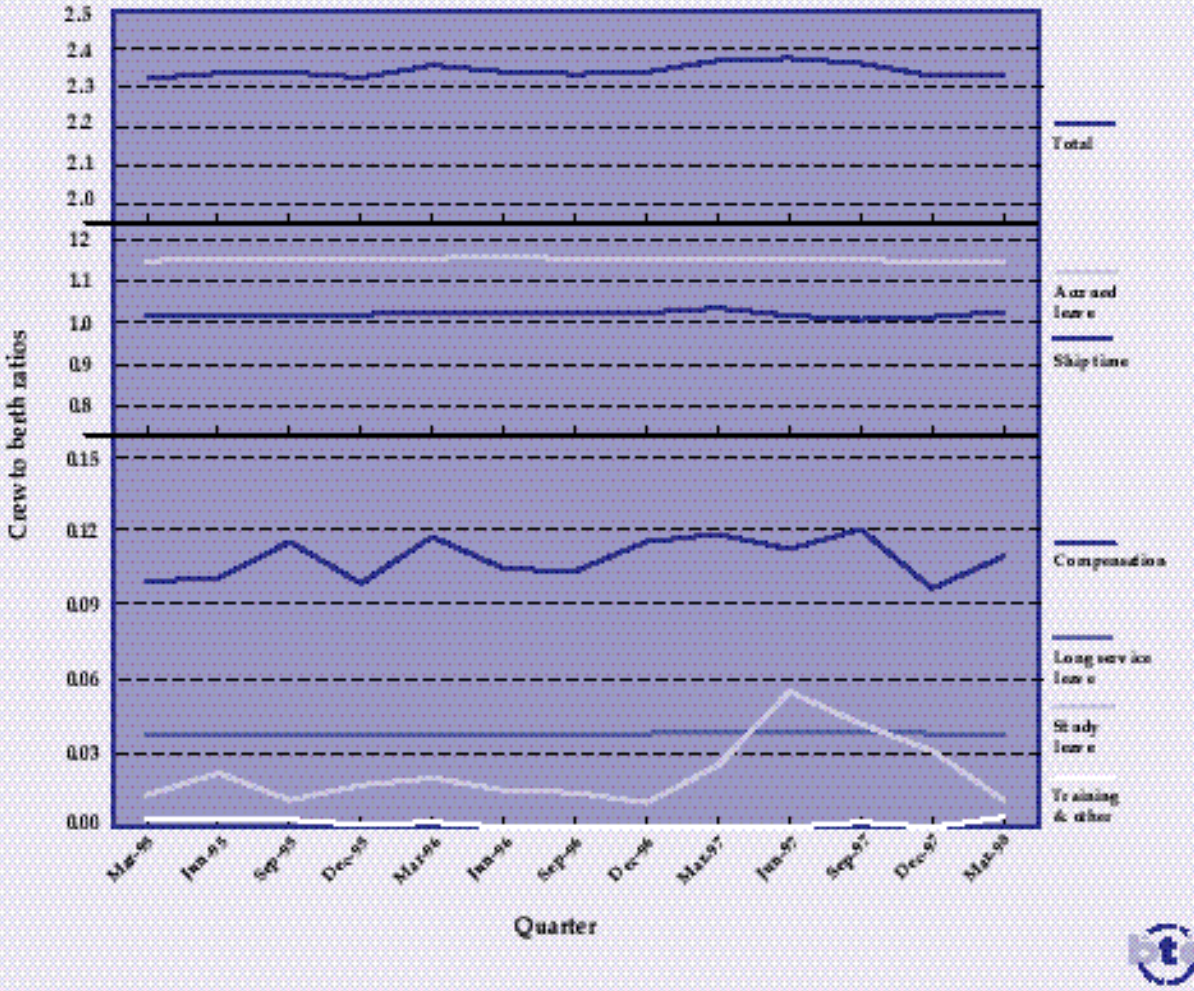
FIGURES

FIGURE 8 CREW TO BERTH RATIOS—AUSTRALIAN OFFSHORE SHIPPING



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TABLES

TABLE 1 CONTAINER TERMINAL PERFORMANCE INDICATORS—PRODUCTIVITY IN CONTAINERS PER HOUR

	Quarter									
Port/indicator	**Dec-95**	**Mar-96**	**Jun-96**	**Sep-96**	**Dec-96**	**Mar-97**	**Jun-97**	**Sep-97**	**Dec-97**	**Mar-98**
Brisbane										
Ships handled	132	124	133	140	141	156	164	162	177	170
Total containers	39473e	34281	42782	53690	51815	40696	52610	58424	58014	49197
Crane rate	15.8	17.6	16.7	16.5	16.9	17.3	16.4	16.1	16.8	18.0
Elapsed rate	17.0	19.0	17.2	17.2	17.4	17.3	16.6	16.8	16.8	16.4
Net rate	20.6	21.5	20.4	20.4	20.4	19.4	18.7	19.1	19.6	19.3 p
Elapsed time not worked (per cent)	17.5	11.6	15.7	15.7	15.0	10.8	11.5	11.7	14.6	14.7 p
Sydney										
Ships handled	203	206	216	228	249	251	249	243	266	238
Total containers	114997e	116308	115564	123390	137542	126265	131004	142659	157430	137600
Crane rate	15.0	15.6	16.0	16.1	15.4	17.7	17.7	18.2	18.4	17.5
Elapsed rate	17.6	18.9	17.6	18.2	na	18.2	18.5	21.7	21.9	19.9
Net rate	21.0	22.1	22.4	23.3	22.7	25.7	25.5	27.9	27.7 r	25.7 p
Elapsed time not worked (per cent)	16.2	14.5	21.4	21.9	na	29.4	27.6	22.4	20.7	22.5 p
Melbourne										
Ships handled	227	228	262	274	282	230	249	268	281	276
Total containers	142324e	134477	140674	163297	161865	130459	143708	162591	178302	166284
Crane rate	16.3	17.0	18.4	19.6	17.8	19.0	19.0	18.6	18.8	19.5
Elapsed rate	18.8	20.2	20.5	21.1	17.9	19.5	20.3	20.5	19.9	20.1
Net rate	21.9	23.4	25.9	25.6	21.7	23.0	24.0	23.5	22.6	22.8 p
Elapsed time not worked (per cent)	14.2	13.7	20.8	17.6	17.8	15.3	15.4	13.0	11.9	11.8 p
Adelaide										
Ships handled	42	47	63	70	74	69	65	68	66	60
Total containers	14893e	13982	15874	17415	19047	17486	16874	20974	20773	18163
Crane rate	18.8	18.9	18.2	19.3	19.6	19.6	21.0	21.1	21.4	22.5
Elapsed rate	22.8	23.3	22.0	22.2	22.6	24.0	28.3	28.4	29.2	29.6
Net rate	23.3	23.8	22.5	22.8	23.1	24.6	29.1	29.2	30.1	30.7
Elapsed time not worked (per cent)	2.1	2.1	2.2	2.6	2.2	2.4	2.7	2.7	3.0	3.6
Fremantle										
Ships handled	124	143	153	159	161	159	164	166	173	165
Total containers	37963e	40008	43581	42409	46707	42942	43081	47205	52603	50525
Crane rate	16.2	17.9	20.0	17.8	18.2	19.4	19.0	18.8	18.9	19.6
Elapsed rate	13.4	15.7	14.8	13.4	15.6	16.2	15.9	17.0	18.9	na
Net rate	16.7	18.9	20.0	19.4	20.5	20.6	19.8	20.6	23.2	22.8 p
Elapsed time not worked (per cent)	19.8	16.9	26.0	30.9	23.9	21.5	19.5	17.6	18.4	na
Five ports										
Ships handled	728	748	827	871	907	865	891	907	963	909
Total containers	349650e	339056	358475	400201	416977	357848	387277	431853	467122	421769
Crane rate	15.9	16.9	17.7	18.0	17.1	18.4	18.3	18.3	18.5	18.8
Elapsed rate	17.7	19.3	18.6	19.0	na	18.6	19.0	20.4	20.5	20.0 a
Net rate	20.9	22.3	23.4	23.5	21.8	23.4	23.6	24.3	24.3	23.7 p
Elapsed time not worked (per cent)	15.3	13.5	20.5	19.1	na	20.3	19.2	16.2	15.7	15.5 a

p *provisional*
r *revised*
na *not available*
a. *Four-port average only, as Fremantle elapsed rate data were not available at time of publication.*
e. *BTE estimate.*

Notes *1. Elapsed rates and net rates from March quarter 1997 onwards are not directly comparable with earlier figures (except at Adelaide) due to changes in a terminal operator's information systems.*
2. The data in this table are expressed in containers per hour and therefore are not directly comparable with the teus per hour data in table 8.
3. Elapsed time not worked is the difference between the net and elapsed rates (unrounded) as a percentage of the net rate.

Sources *Patrick, P&O Ports and SeaLand.*

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TABLE 2 AVAILABILITY OF BERTH, PILOTAGE AND TOWAGE SERVICES AT THE SCHEDULED/CONFIRMED TIME, MARCH QUARTER 1998

(Number of ship calls)

	Delay (hrs)								Total no. of ship
Port/operation	**0**	**1**	**2**	**3**	**4**	**5–10**	**11–20**	**>20**	**calls**
Brisbane									
Berth availability	**34**	**0**	**0**	**0**	**0**	0	1	2	37
Pilotage	**37**	**0**	0	0	0	0	0	0	37
Towage	**36**	**1**	0	0	0	0	0	0	37
Sydney									
Berth availability	**48**	**0**	**3**	**0**	**1**	6	5	2	65
Pilotage	**65**	**0**	0	0	0	0	0	0	65
Towage	**65**	**0**	0	0	0	0	0	0	65
Melbourne									
Berth availability	**68**	**1**	**0**	**0**	**1**	3	5	4	82
Pilotage	**80**	**2**	0	0	0	0	0	0	82
Towage	**81**	**1**	0	0	0	0	0	0	82
Adelaide									
Berth availability	**20**	**0**	**1**	**0**	**0**	1	0	2	24
Pilotage	**24**	**0**	0	0	0	0	0	0	24
Towage	**24**	**0**	0	0	0	0	0	0	24
Fremantle									
Berth availability	**58**	**0**	**0**	**0**	**0**	0	2	0	60
Pilotage	**60**	**0**	0	0	0	0	0	0	60
Towage	**60**	**0**	0	0	0	0	0	0	60
Five ports									
Berth availability	**228**	**1**	**4**	**0**	**2**	10	13	10	268
Pilotage	**266**	**2**	0	0	0	0	0	0	268
Towage	**266**	**2**	0	0	0	0	0	0	268

Note *Data for individual ports should be interpreted with caution as there is significant inter-port variation in factors such as sample sizes and ship call patterns.*

Source *Data for a sample of ship calls provided by shipping lines.*

TABLES

TABLE 3 OTHER SHIP WAITING TIME INCIDENTS AT THE FIVE MAINLAND CAPITAL CITY PORTS, MARCH QUARTER 1998

(Number of incidents)

Incident type	Ship waiting time (hrs) 1	2	3	4	5–10	11–20	>20	Total no. of incidents
Ship arrived early	4	9	3	1	7	3	3	30
Stevedoring finished early	5	9	2	3	6	0	0	25
Awaiting labour	2	0	5	1	10	2	2	22
Stevedoring finished late	1	0	1	1	10	6	1	20
Pilot/tug booking not at preferred time	5	6	5	1	0	0	0	17
Weather or tides	2	3	2	1	2	2	0	12
Industrial action	1	1	0	1	3	2	2	10
Crane breakdown	2	3	1	1	1	0	0	8
Ship repairs or maintenance	0	1	0	1	1	4	1	8
Closed port—holidays	0	0	0	0	0	2	5	7
Awaiting cargo or late cargo changes	0	0	1	1	2	0	0	4
Late ship arrival	0	1	0	0	1	0	2	4
Other[a]	3	3	2	1	0	0	0	9
Total incidents	**25**	**36**	**22**	**13**	**43**	**21**	**16**	**176[b]**

a. Mainly involves faulty lashing gear and channel unavailable due to other ship movements.
b. These incidents affected 136 of the 268 ship calls covered in table 2.

Source Data for a sample of ship calls provided by shipping lines.

TABLE 4 STEVEDORING AND SHIP ARRIVAL RELIABILITY INDICATORS, DECEMBER QUARTER 1997 AND MARCH QUARTER 1998

(per cent)

Indicator	Brisbane Oct–Dec	Brisbane Jan–Mar	Sydney Oct–Dec	Sydney Jan–Mar	Melbourne Oct–Dec	Melbourne Jan–Mar	Adelaide Oct–Dec	Adelaide Jan–Mar	Fremantle Oct–Dec	Fremantle Jan–Mar
Stevedoring										
Stevedoring completion	58	60	27	28	na	na	na	na	na	na
Stevodoring rate	49	48	60	61	59	63	na	na	na	na
Cargo receival	93	93	85	82	97	93	na	na	na	na
Ship arrival										
Advice at 24 hrs	74	60	60	51	na	na	91	43[a]	53	56
Advice inside 24 hrs	91	94	94	91	na	na	na	na	86[r]	93

r revised to incorporate amended data provided by port authority
na not available
a. Low figure for Adelaide is reportedly attributable to industrial issues at other ports.

Sources AAPMA, Patrick and P&O Ports.

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TABLE 5 ROUND TRIP REBATE FOR A DRIVER TRAVELLING WITH A MOTOR CAR, BUS, OR MOTOR CYCLE, 1 SEPTEMBER 1996 TO 30 JUNE 1997

	Off peak season 1 Sep 96 – 27 Sep 96 13 Apr 97 – 30 Jun 97	Shoulder season 28 Sep 96 – 13 Dec 96 26 Jan 97 – 12 Apr 97	High season 14 Dec 96 – 25 Jan 97
Eligible vehicle			
Motor car or bus	$200	$240	$300
Motor cycle	$100	$120	$150

Note *The rebate for a one-way trip is 50 per cent of the rebate for a round trip. Where a round trip consists of northbound and southbound legs in different seasons, the booking is, for the purposes of determining a rebate, considered as consisting of two one-way trips.*

Source *DoTRD 1996.*

TABLES

TABLE 6 MERCHANT SHIPPING CREW TO BERTH RATIOS BY ACTIVITY AND CREW CLASSIFICATION, MARCH QUARTER 1998[p]

Crew type	Ship time	Accrued leave	Compen-sation	Long service leave	Study leave	Training & other	Total[a]
Deck officers	1.053	0.984	0.019	0.035	0.025	0.018	2.134
Engineers	1.041	0.972	0.041	0.035	0.053	0.009	2.151
All officers	1.047	0.978	0.030	0.035	0.040	0.014	2.143
Integrated ratings	1.017	0.943	0.081	0.034	0.000	0.001	2.075
Catering crew	1.025	0.942	0.064	0.034	0.000	0.001	2.066
All ratings	1.019	0.943	0.076	0.034	0.000	0.001	2.072
All crew	1.032	0.958	0.055	0.034	0.018	0.007	2.104
Previous quarter	1.028	0.962	0.062	0.035	0.027	0.009	2.123
Initial level[b]	1.025	0.971	0.073	0.035	0.024	0.006	2.133

p preliminary
a. Components may not sum to totals due to rounding.
b. Initial level for September quarter 1993.

Source Data provided by ship operators.

TABLE 7 OFFSHORE SHIPPING CREW TO BERTH RATIOS BY ACTIVITY AND CREW CLASSIFICATION, MARCH QUARTER 1998[p]

Crew type	Ship time	Accrued leave	Compen-sation	Long service leave	Study leave	Training & other	Total[a]
Deck officers	1.043	1.153	0.040	0.038	0.031	0.004	2.310
Engineers	1.017	1.153	0.026	0.037	0.014	0.004	2.251
All officers	1.030	1.153	0.033	0.037	0.022	0.004	2.280
Integrated ratings	1.020	1.138	0.147	0.038	0.000	0.002	2.347
Catering crew	1.055	1.153	0.364	0.043	0.000	0.010	2.625
All ratings	1.026	1.141	0.179	0.039	0.000	0.003	2.388
All crew	1.028	1.147	0.110	0.038	0.011	0.004	2.337
Previous quarter	1.016	1.151	0.097	0.038	0.031	0.000	2.334
Initial level[b]	1.021	1.151	0.100	0.038	0.013	0.003	2.327

p preliminary
a. Components may not sum to totals due to rounding.
b. Initial level for March quarter 1995.

Source Data provided by ship operators.

TABLE 8 CONTAINER TERMINALPERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS, DECEMBER QUARTER 1989 TO MARCH QUARTER 1998 —PRODUCTIVITY IN TEUS PER HOUR

	Dec-89	Mar-90	Jun-90	Sep-90	Dec-90	Mar-91	Jun-91	Sep-91	Dec-91	Mar-92	Jun-92	Sep-92	……	Sep-93	Dec-93
Brisbane															
Ships handled	51	60	63	70	88	75	89	91	91	85	96	93	na	106	111
Total TEUS	25797	26235	24544	27628	32705	23203	33845	38074	36021	28235	39058	45055	na	49622	46529
Crane rate	13.30	12.90	13.60	12.00	12.30	13.30	13.40	14.30	14.90	17.00	18.00	19.80	na	21.24	21.07
Elapsed rate	17.30	16.00	14.80	15.10	15.10	13.40	16.30	16.90	17.80	19.60	21.20	25.60	na	26.57	24.56
Net rate	19.00	17.60	17.40	17.30	17.00	14.50	17.40	18.20	19.60	21.10	22.90	27.40	na	29.38	27.47
Sydney															
Ships handled	93	110	107	108	119	107	114	109	109	105	109	112	na	205	238
Total teus	69290	62793	61153	60257	69975	55012	58075	67601	72250	71702	68359	81287	na	124028	139321
Crane rate	13.30	13.00	13.50	13.20	14.80	14.20	14.10	15.50	17.50	18.60	19.80	20.90	na	19.84	20.44
Elapsed rate	11.90	11.60	14.60	12.40	12.40	14.40	13.60	16.50	18.40	19.90	22.90	24.10	na	22.59	21.96
Net rate	14.40	14.30	16.50	14.60	16.70	16.90	15.50	18.40	22.70	26.30	31.20	30.40	na	29.36	28.33
Melbourne															
Ships handled	106	117	118	132	143	131	117	113	125	108	121	121	na	235	306
Total teus	82612	71825	70253	84043	81978	72632	73921	75427	95019	73441	82757	86486	na	129687	143350
Crane rate	12.40	13.60	14.40	14.60	14.70	15.00	14.10	15.70	14.80	16.70	18.10	19.40	na	22.34	18.95
Elapsed rate	14.10	16.90	17.10	18.00	18.00	18.20	17.00	17.60	18.70	19.20	20.90	22.60	na	25.89	20.01
Net rate	17.20	20.00	20.00	19.90	20.00	20.90	19.80	20.90	20.50	22.10	23.90	24.90	na	29.30	22.89
Adelaide															
Ships handled	23	23	24	18	29	25	19	20	21	22	20	21	na	21	26
Total teus	9295	9461	9389	7516	10971	11572	9402	9442	10998	10810	10710	10763	na	9650	12616
Crane rate	15.80	17.80	17.10	16.20	17.10	16.10	17.70	17.00	18.00	19.80	18.70	19.10	na	19.80	20.90
Elapsed rate	18.70	23.20	20.80	22.30	19.70	21.70	23.20	19.60	25.30	27.20	24.40	25.90	na	23.10	25.50
Net rate	19.30	23.80	22.00	23.30	20.80	23.70	23.70	20.50	25.90	28.20	25.00	27.90	na	26.10	26.60
Fremantle															
Ships handled	69	64	66	72	66	68	74	76	77	71	75	72	na	116	115
Total teus	24380	22362	19411	22339	21567	21205	23696	22713	26522	25403	26572	27690	na	37566	40910
Crane rate	14.00	14.50	13.50	15.50	15.60	15.50	15.80	15.00	16.40	21.00	18.60	20.40	na	19.00	19.82
Elapsed rate	11.80	12.10	11.80	12.40	12.80	12.90	12.90	12.10	13.10	16.80	15.10	18.20	na	13.13	15.54
Net rate	14.70	15.20	14.20	16.30	16.40	16.30	16.60	15.80	16.40	21.00	18.60	21.40	na	19.39	20.98
Five ports															
Ships handled	342	374	378	400	445	406	413	409	423	391	421	419	na	683	796
Total teus	211374	192676	184750	201783	217196	183624	198939	213257	240810	209591	227456	251281	na	350553	382726
Crane rate	13.40	13.50	14.00	13.90	14.50	14.60	14.30	15.40	15.90	18.00	18.70	20.10	na	20.87	19.91
Elapsed rate	13.50	14.20	15.30	15.00	14.90	15.70	15.40	16.40	17.80	19.40	20.70	23.10	na	23.37	20.98
Net rate	16.10	17.00	17.70	17.30	18.00	18.20	17.70	18.90	20.60	23.30	24.70	26.50	na	28.18	25.35

p *provisional*
na *not available*

Note *Elapsed rates and net rates from the March quarter 1997 onwards are not directly comparable with earlier figures (except at Adelaide), due to changes in a terminal operator's information systems.*

Sources *WIRA, Patrick, P&O Ports and SeaLand.*

TABLE 8 (cont.) CONTAINER TERMINALPERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS, DECEMBER QUARTER 1989 TO MARCH QUARTER 1998 —PRODUCTIVITY IN TEUS PER HOUR

	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98
Brisbane																	
Ships handled	112	140	140	187	136	123	135	132	124	133	140	141	156	164	162	177	170
Total teus	37820	52983	51596	50574	41723	47065	58851	46439	39037	51008	66115	62904	47471	65572	73184	71043	58857
Crane rate	20.4	20.8	20.3	18.9	18.4	18.0	18.6	18.9	20.0	19.9	20.6	20.6	20.0	20.5	20.2	20.5	21.6
Elapsed rate	20.9	22.6	21.5	19.6	17.8	18.6	19.5	21.0	21.5	20.5	20.9	21.1	20.3	20.6	21.2	20.8	19.9
Net rate	23.9	25.9	25.7	23.4	20.9	21.6	22.5	24.6	24.4	24.3	25.1	24.9	22.7	23.3	24.0	24.2	23.4[p]
Sydney																	
Ships handled	177	240	223	221	218	202	192	203	206	216	228	249	251	249	243	266	238
Total teus	116914	129586	142659	152326	144868	140113	148431	143746	146038	148290	156344	174982	158323	167705	183978	201535	176496
Crane rate	16.4	18.5	16.9	16.0	18.9	18.1	19.3	18.5	19.5	19.9	20.3	19.6	22.3	22.6	23.5	23.5	22.5
Elapsed rate	18.7	20.8	19.4	20.3	21.6	20.7	23.4	21.8	23.8	22.1	23.1	na	22.7	23.6	28.0	28.2	25.6
Net rate	28.3	29.1	25.0	26.3	28.0	26.6	29.9	25.7	28.0	27.9	29.5	28.9	32.2	32.7	36.1	35.5	33.0[p]
Melbourne																	
Ships handled	211	265	267	244	265	228	221	227	228	262	274	282	230	249	268	281	276
Total teus	153420	158849	159039	180134	173338	152983	161943	173566	162911	170884	203371	202376	162156	177070	208200	223465	207346
Crane rate	19.7	19.1	18.5	20.2	20.8	19.4	19.8	19.6	20.5	22.3	24.5	22.4	23.6	23.5	23.6	23.6	24.3
Elapsed rate	19.5	19.2	17.9	21.5	23.9	23.7	24.1	22.8	24.4	25.0	26.5	22.1	24.3	25.1	26.0	25.2	25.3
Net rate	23.8	22.7	21.3	25.8	26.9	25.9	26.6	26.4	28.3	31.7	32.2	27.2	28.7	29.7	29.9	28.7	28.7[p]
Adelaide																	
Ships handled	28	34	31	33	35	50	34	42	47	63	70	74	69	65	68	66	60
Total teus	13243	12461	13167	15038	16832	21676	14319	17318	15955	18803	20519	23351	21963	20933	25982	25188	22260
Crane rate	20.6	19.1	19.8	20.2	21.5	20.2	20.9	21.4	21.5	21.5	22.7	24.0	24.6	26.0	26.1	26.0	27.5
Elapsed rate	27.8	24.7	24.6	24.2	24.9	24.9	24.9	26.1	26.6	26.1	26.2	27.7	30.2	35.1	35.2	35.4	36.3
Net rate	29.8	25.7	26.0	25.7	25.3	25.7	26.5	26.7	27.2	26.7	26.8	28.3	30.9	36.0	36.2	36.5	37.6
Fremantle																	
Ships handled	127	135	121	124	128	136	139	124	143	153	159	161	159	164	166	173	165
Total teus	40587	40986	36635	46969	44388	45308	50050	44662	47597	51113	50791	55593	51784	52092	57903	64243	62922
Crane rate	19.8	19.3	21.6	22.9	20.2	19.3	19.5	19.2	21.2	23.4	20.8	21.5	23.3	22.9	23.1	23.6	24.5[p]
Elapsed rate	15.2	14.6	14.9	16.5	17.7	15.5	17.7	15.8	18.3	17.6	16.0	18.6	19.7	19.5	21.0	22.2	na
Net rate	19.8	19.5	21.8	23.4	21.6	20.5	21.1	19.8	22.2	23.5	22.6	24.2	25.0	24.0	25.5	28.8	28.4[p]
Five ports																	
Ships handled	655	814	782	809	782	739	721	728	748	827	871	907	865	891	907	963	909
Total teus	361984	394865	403096	445041	421149	407145	433594	425731	411538	440098	497140	519206	441697	483372	549247	585474	527881
Crane rate	18.8	19.2	18.5	18.9	19.9	18.9	19.5	19.2	20.3	21.3	22.3	21.2	22.8	22.8	23.2	23.3	23.5[p]
Elapsed rate	19.2	19.9	18.9	20.4	21.9	21.2	22.5	21.7	23.2	22.6	23.6	na	23.1	23.8	26.0	25.8	na
Net rate	25.0	25.0	23.4	25.4	26.1	25.0	26.5	25.3	27.1	28.5	29.1	27.2	29.0	29.5	31.0	30.8	29.9[p]

p provisional
na not available

Note Elapsed rates and net rates from the March quarter 1997 onwards are not directly comparable with earlier figures (except at Adelaide), due to changes in a terminal operator's information systems.

Sources WIRA, Patrick, P&O Ports and SeaLand.

ABBREVIATIONS

AAPMA	Association of Australian Ports and Marine Authorities
BTCE	Bureau of Transport and Communications Economics
BTE	Bureau of Transport Economics
DoTRD	Department of Transport and Regional Development
teu	Twenty-foot equivalent unit
WIRA	Waterfront Industry Reform Authority

DEFINITIONS

Elapsed time—the total time over which the ship is worked, measured from labour aboard to labour ashore.

Elapsed rate—the number of containers or teus moved per elapsed hour.

Net time—the elapsed time minus the time unable to work the ship due to award shift breaks, ship's fault, weather, awaiting cargo, industrial disputes, closed holidays, or shifts not worked at the ship operator's request.

Net rate—the number of containers or teus moved per net hour.

Crane rate—the number of containers or teus moved per net crane hour.

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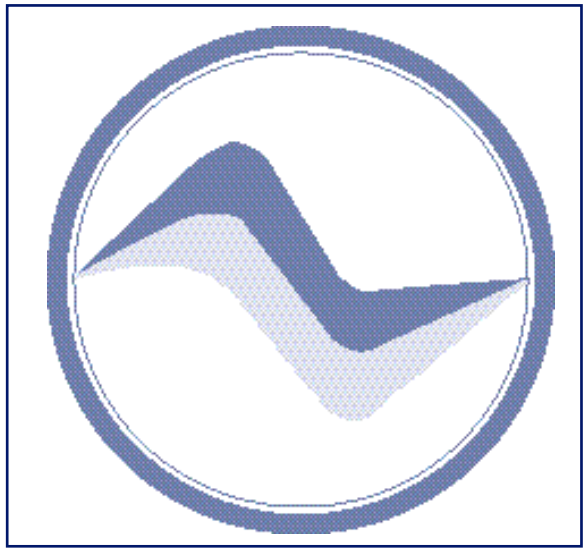

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