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Investing in Australian container stevedoring capacity

In Waterline 16, the BTE commented on the Australian container transport system's ability to adapt to a significant reduction in capacity caused by the industrial dispute between Patrick and the Maritime Union of Australia (MUA). The BTE questioned the strength of the argument for further container terminal investment in Australia based on the grounds of capacity shortages.

The article was based on a simple analysis and was offered as an observation on what is a very complex issue. Building a new container terminal is not cheap, particularly compared with the alternative of improving the utilisation of existing capacity. On the other hand, new container terminals are not built overnight, and therefore some consideration needs to be made regarding future demand on the Australian container transport system. On this note, it is interesting that over the past 5 years Australian container throughput, measured in teus, has increased by approximately 80 per cent (see page 7 of this issue).

Equating demand with capacity is relatively straight forward. However, assessing the many other issues involved in expanding Australian container terminal capacity is far more complex. Some of the major issues include:

- the commercial viability of the investment;
- the stevedoring industry competition implications;
- the effect on supporting infrastructure such as land transport services; and
- the balance between port, state and national interests.

Determining the commercial viability of investing in the Australian container stevedoring industry is arguably best left to the investor. However, should such an investment fail, the implications for stakeholders in the industry may be significant and difficult to predict.

Within a port, increasing the competitiveness of container stevedores may be achieved by increasing the number of stevedores. However, the incumbent major Australian container stevedores provide a network of services. Consequently, the introduction of a new terminal operator in one port may not be sufficient to reduce to any great extent the competitive advantage the incumbent stevedores derive from their networks. An alternative strategy may be to allow incumbent stevedores to expand their terminals in such a way that maintains a competitive incentive to 'poach' customers from each other. But this 'economies of scale' argument cannot be pursued indefinitely as there are physical constraints on continued terminal expansion.

Increasing the performance of a port's container stevedoring services may be achieved without expansion of that port's terminal capacity. Instead, performance improvements could be achieved by introducing new terminal capacity in a competing port. However, there is little incentive for a port to encourage investments in competing ports, even though the net national benefits may be significant.

Finally, any investment to increase container stevedoring capacity within a port must be matched by appropriate land transport infrastructure responses. The benefits of increased terminal capacity to the port may be less than the social cost to the city the port serves. Possibly the largest of these costs would be increased traffic congestion around the port and adjacent suburbs.

These are just brief comments on some of the issues involved in expanding Australian container stevedoring capacity. However, one factor encompasses all these issues and that is the balance between the competing interests of all the stakeholders in the Australian container stevedoring industry. Consequently, when reading about the arguments for and against container terminal investment strategies in this country, the reader should always be conscious of whose interests are served by the different arguments and strategies.

UNDERSTANDING CONTAINER HANDLING STATISTICS

This article is an edited version of a research note produced by Greg Baker of the Information and Research Services (IRS) team of the Department of the Parliamentary Library. The research note was produced by IRS during the Patrick and MUA dispute earlier this year. The BTE is very grateful to the Department of the Parliamentary Library for permission to reproduce its work as the basis of this article.

A wide variety of indicators can be used to assess Australia's waterfront performance. Important among these are what the Bureau of Transport Economics (BTE) calls stevedoring performance indicators and the Productivity Commission calls capital productivity measures. How are these indicators defined? And are these indicators internationally comparable? To understand the statistics it is necessary to be aware of some of the factors used in the measurement of productivity.

Container sizes

Standard shipping containers are specified by the International Standards Organisation as 20 feet long by 8.5 feet square. This is the standard unit for measuring container throughput; that is, one such standard container is 1 twenty-foot equivalent unit or 1 teu.

Other containers can be counted as equivalent to a number of teus. For example, a 40-foot container, which is 40 feet long by 8.5 feet square, is equivalent to 2 teus. Non-standard container sizes can also be measured to give a teu value for use in calculating statistics.

Ports

The physical features and the trade characteristics of a port can influence productivity measurement. For example, a port with a low volume of throughput, compared with the capacity of the infrastructure of the port, tends to facilitate higher productivity levels, although possibly at a higher cost.

Time

Most stevedoring performance measures are based on time. However, the way time is measured can vary from one indicator to the next.

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

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

Consequently:

- The elapsed rate is measured by dividing throughput by elapsed time;
- The net rate is measured by dividing throughput by net time; and
- The crane rate is measured as the average net rate per crane.

That is, the crane rate is a measure of productivity per crane whilst the elapsed and net rates are measures of productivity per ship handled.

Container movements—teus

There are two measuring units in general use that indicate waterfront productivity in terms of the throughput of containers. The first, and one which has been measured in Australia since 1989, is to form the measure in terms of the number of teus handled.

A disadvantage of using measures based on teus, whether for national or international comparisons, is that the productivity statistics may be affected by differences in the mix of 20-foot and 40-foot containers. Many large overseas ports have a high proportion of 40-foot containers and thus, all other things being equal, will show higher crane rates, measured in teus, than Australian ports which have a lower proportion of 40-foot containers. Furthermore, any changes in the mix of 20-foot and 40-foot containers since 1989 mean that even Australian statistics are not strictly comparable over this period.

Container movements—lifts

The second unit of measure of container movements simply counts the number of container movements regardless of the size of the containers. This method, to some extent, overcomes problems associated with the mix of 20-foot and 40-foot containers.

International comparisons

While the above indicators are useful to show changes in waterfront productivity over time, they need to be treated with caution if used to make comparisons with waterfront productivity in overseas ports.

The Productivity Commission's 1998 study International Benchmarking of the Australian Waterfront[1] shows a number of overseas ports exceeding Australia's crane rate measured in lifts per hour. However, this may in part be a function of the trade carried out. For instance, in the South-East Asian trade, Fremantle crane rates exceed those of high-ranking Singapore. It is therefore not entirely valid to use these stevedoring productivity indicators for comparisons with overseas ports.

Moreover, factors such as stowage, the proportion of a ship's total containers handled at any particular port, the characteristics of the ships exchanging containers, and the terminal equipment available all contribute significantly towards the productivity rate at overseas ports as well as at Australian ports. It has often been said that stevedoring productivity should not be compared, even between Australian ports, because of the underlying differences pertaining at each of the ports.

STEVEDORING PRODUCTIVITY

Table 1 presents the September quarter 1996 to September quarter 1998 indicators of stevedoring productivity for the five major Australian container terminals, expressed in container moves per hour. Figures 1 to 6 present these data over the December quarter 1995 to September quarter 1998 period. The data for Brisbane, Sydney, Melbourne and Fremantle are weighted averages for the major terminals operated by P&O Ports and Patrick. The Adelaide data cover the Sea-Land terminal.

Fremantle elapsed rate data from one operator are not available and therefore only a four-port average indicator could be calculated. However, given that the five-port average is dominated by Melbourne and Sydney, the four-port figure calculated is a reasonable approximation of the five-port average.

Overall, national stevedoring productivity, as measured by the five-port average, changed little in the September quarter compared with the June quarter:

- the five-port average crane rate (productivity per crane while the ship is worked) was 19.1 containers per hour for the September quarter compared with 18.7 in the June quarter;
- the four-port (Fremantle data not available) average elapsed rate (productivity per ship based on the time labour is aboard the ship) remained unchanged at 20.7 containers per hour in the September quarter; and
- the five-port average net rate (productivity per ship while the ship is worked) was 24.2 containers per hour compared with 24.7 containers in the June quarter.

The Brisbane average crane rate was 18.2 containers per hour in the September quarter, up from 17.3 in the June quarter. The Brisbane elapsed rate of 18.7 containers per hour and the net rate of 21.9 containers per hour were both up on the June quarter figure. These September quarter crane, elapsed and net rates are the highest container productivity rates to date for Brisbane. The average proportion of elapsed time not worked decreased a little to 14.6 per cent.

The Sydney average crane rate was 16.5 containers per hour in the September quarter, down from 16.9 in the June quarter. The Sydney elapsed rate of 19.2 containers per hour and the net rate of 24.2 containers per hour were both down on the June quarter figure. This decline in productivity, coincides with media reports of ongoing unrest at both

1. Productivity Commission, International Benchmarking of the Australian Waterfront, Research Report, AusInfo, Canberra, April 1998.

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

	Quarter								
Port/indicator	**Sep-96**	**Dec-96**	**Mar-97**	**Jun-97**	**Sep-97**	**Dec-97**	**Mar-98**	**Jun-98**	**Sep-98**
Five ports									
Ships handled	871	907	865	891	907	963	909	845	1020
Total containers	400201	416977	357848	387277	431853	467122	421769	406938	493502
Crane rate	18.0	17.1	18.4	18.3	18.3	18.5	18.8	18.7	19.1
Elapsed rate	19.0	na	18.6	19.0	20.4	20.5	20.0[a]	20.7[a]	20.7[a]
Net rate	23.5	21.8	23.4	23.6	24.3	24.3	23.4	24.7	24.2
Elapsed time not worked (per cent)	19.1	na	20.3	19.2	16.2	15.7	14.6[a]	16.2[a]	14.5[a]
Brisbane									
Ships handled	140	141	156	164	162	177	170	168	192
Total containers	53690	51815	40696	52610	58424	58014	49197	58939	70200
Crane rate	16.5	16.9	17.3	16.4	16.1	16.8	18.0	17.3	18.2
Elapsed rate	17.2	17.4	17.3	16.6	16.8	16.8	16.4	17.1	18.7
Net rate	20.4	20.4	19.4	18.7	19.1	19.6	19.1	20.2	21.9
Elapsed time not worked (per cent)	15.7	15.0	10.8	11.5	11.7	14.6	13.9	15.4	14.6
Sydney									
Ships handled	228	249	251	249	243	266	238	219	267
Total containers	123390	137542	126265	131004	142659	157430	137600	130513	160007
Crane rate	16.1	15.4	17.7	17.7	18.2	18.4	17.5	16.9	16.5
Elapsed rate	18.2	na	18.2	18.5	21.7	21.9	19.9	20.2	19.2
Net rate	23.3	22.7	25.7	25.5	27.9	27.7	25.7	26.2	24.2
Elapsed time not worked (per cent)	21.9	na	29.4	27.6	22.4	20.7	22.5	22.9	20.7
Melbourne									
Ships handled	274	282	230	249	268	281	276	234	309
Total containers	163297	161865	130459	143708	162591	178302	166284	147122	187696
Crane rate	19.6	17.8	19.0	19.0	18.6	18.8	19.5	19.2	20.2
Elapsed rate	21.1	17.9	19.5	20.3	20.5	19.9	20.1	21.0	21.8
Net rate	25.6	21.7	23.0	24.0	23.5	22.6	22.7	24.2	24.5
Elapsed time not worked (per cent)	17.6	17.8	15.3	15.4	13.0	11.9	11.6	13.3	11.1
Adelaide									
Ships handled	70	74	69	65	68	66	60	66	63
Total containers	17415	19047	17486	16874	20974	20773	18163	23293	21444
Crane rate	19.3	19.6	19.6	21.0	21.1	21.4	22.5	23.1	23.2
Elapsed rate	22.2	22.6	24.0	28.3	28.4	29.2	29.6	30.4	29.0
Net rate	22.8	23.1	24.6	29.1	29.2	30.1	30.7	31.5	30.3
Elapsed time not worked (per cent)	2.6	2.2	2.4	2.7	2.7	3.0	3.6	3.5	4.3
Fremantle									
Ships handled	159	161	159	164	166	173	165	158	189
Total containers	42409	46707	42942	43081	47205	52603	50525	47071	54155
Crane rate	17.8	18.2	19.4	19.0	18.8	18.9	19.6	21.5	22.2
Elapsed rate	13.4	15.6	16.2	15.9	17.0	18.9	na	na	na
Net rate	19.4	20.5	20.6	19.8	20.6	23.2	21.1	23.9	23.8
Elapsed time not worked (per cent)	30.9	23.9	21.5	19.5	17.6	18.4	na	na	na

na not available

a. Four port average only as Fremantle elapsed rate data are not available .

Notes

1. The June quarter 1998 figures do not include data for Patrick covering the 8 April to 7 May 1998 period of the major industrial disputation with the MUA.
2. 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.
3. 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 9.
4. Elapsed time not worked is the difference between the net and elapsed rates as a percentage of the net rate.

Sources Patrick, P&O Ports and Sea-Land.

Botany Bay terminals during the September quarter. The average proportion of elapsed time not worked decreased to 20.7 per cent.

The Melbourne average crane rate was 20.2 containers per hour in the September quarter, up from 19.2 in the June quarter. The Melbourne elapsed rate of 21.8 containers per hour and the net rate of 24.5 containers per hour were both up on the June quarter figures. Melbourne's crane and elapsed rates are the highest so far recorded for Melbourne in Waterline while the net rate is the second highest recorded for Melbourne. Elapsed time not worked decreased to 11.1 per cent, which is the lowest recorded for Melbourne to date.

The Adelaide average crane rate was 23.2 containers per hour in the September quarter, compared with 23.1 containers per hour in the June quarter. Of Australia's five major container ports, Adelaide remains the port with the highest crane rate. The Adelaide elapsed rate of 29.0 containers per hour and the net rate of 30.3 containers per hour were both down on the June quarter figures. The average proportion of elapsed time not worked increased to an all-time Adelaide high of 4.3 per cent; nevertheless, this figure is still considerably lower than those attained at the other four ports, and reflects the nature of the stevedoring task at Adelaide.

The Fremantle average crane rate was 22.2 containers per hour in the September quarter, up from 21.5 containers per hour in the June quarter. The elapsed data from one operator, for the period March to September 1998, are not available and therefore the elapsed data for Fremantle have not been produced for these quarters. The net rate of 23.8 containers per hour was slightly down on the June quarter figure. The September quarter crane rate is Fremantle's highest quarterly rate to date while the net rate is its second highest.

Teus per hour

Table 9 presents the stevedoring productivity indicators in terms of teus per hour. These data are retained in Waterline for the purposes of recording long-term historical trends; the trends are not directly comparable with the data in table 1 because indicators based on teus per hour may be affected by changes in the mix of 20 foot and 40 foot containers from one period to the next.

Nevertheless, over the period since monitoring first began in the December quarter 1989, the five-port average crane and net rates for the September quarter 1998 are the highest achieved to date. Over the same period, Brisbane (crane rate), Melbourne (crane, elapsed and net rates), and Fremantle (crane and net rates) have achieved record levels. Adelaide's crane rate has dropped very marginally from its record level achieved in the June quarter 1998.

Container Port Activity

Table 1 also provides information on container ship visits and container throughput at each of the five mainland capital city ports. The September quarter 1998 five-port figure showed a 20.7 per cent increase in ship visits and a 21.3 per cent increase in container throughput when compared with the June quarter. Compared with the September quarter of the previous year the five-port figure for container ship visits rose by 12.5 per cent while the five-port average for container throughput rose by 14.3 per cent.

In light of the Patrick and MUA industrial dispute during the June quarter 1998, a port by port container exchange comparison with the June quarter may require careful interpretation. Nevertheless, the September quarter 1998 container exchange at:

- Brisbane was up 19.1 per cent on the June quarter figure, and up 20.2 cent when compared with the September quarter 1997;
- Sydney was up 22.6 per cent on the June quarter figure, and up 12.2 per cent when compared with the September quarter 1997;
- Melbourne was up 27.6 per cent on the June quarter figure, and up 15.4 per cent when compared with the September quarter 1997.

FIGURE 1 FIVE MAJOR PORTS

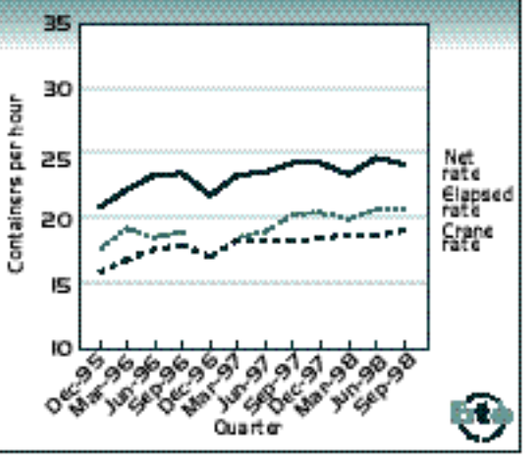


FIGURE 2 BRISBANE

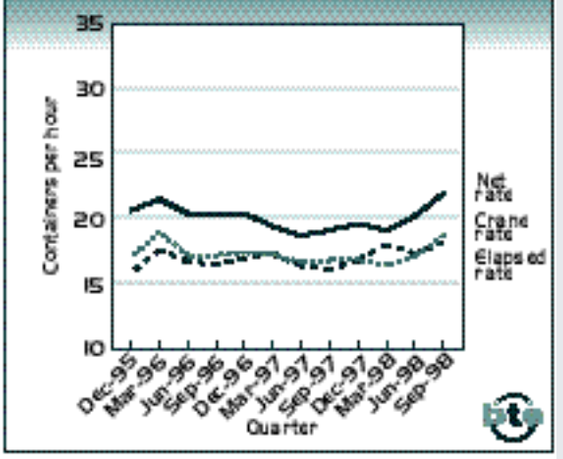


FIGURE 3 SYDNEY

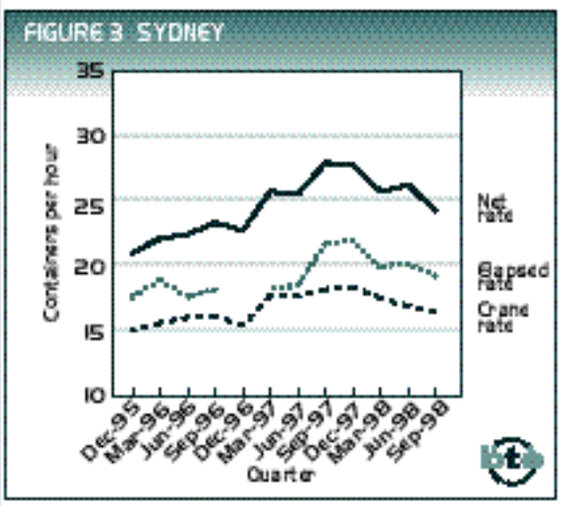


FIGURE 4 MELBOURNE

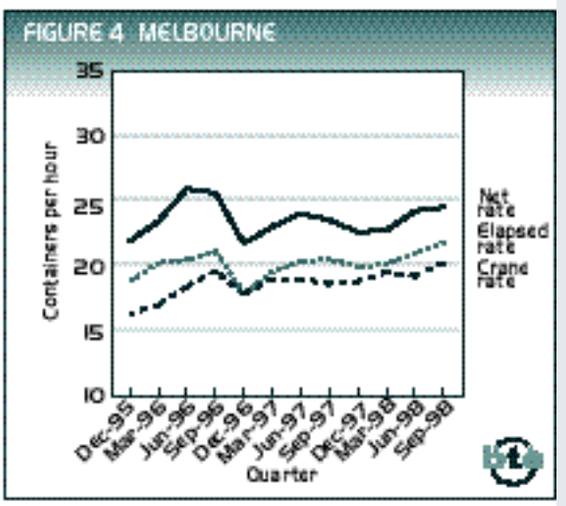


FIGURE 5 ADELAIDE

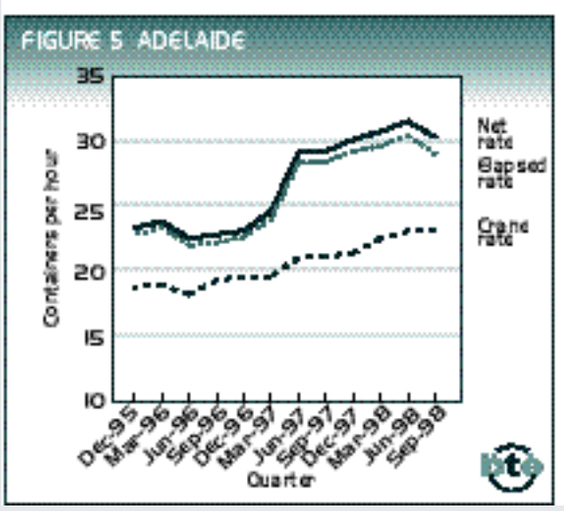
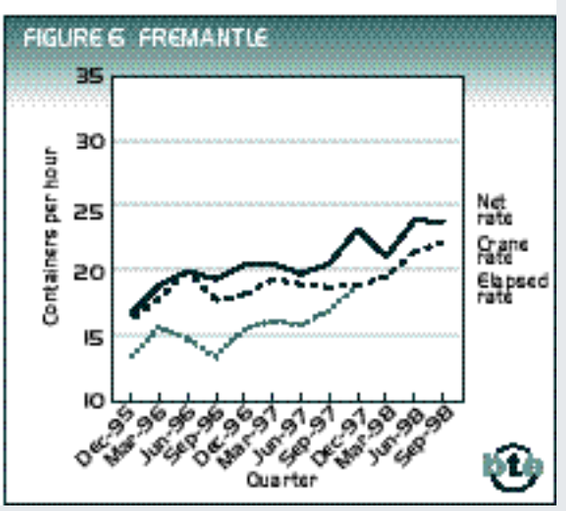


FIGURE 6 FREMANTLE



Note These figures are based on the data contained in table 1. Readers should refer to the notes in that table.

Sources Patrick, P&O Ports and Sea-Land.

- Adelaide was down 7.9 per cent on the June quarter figure, and up 2.2 per cent when compared with the September quarter 1997.
- Fremantle was up 15.0 per cent on the June quarter figure, and up 14.7 per cent when compared with the September quarter 1997.

Compared with the September quarter 1993, the five-port figure for container ship visits has increased by about 50 per cent while the five-port figure for container throughput, measured in teus, increased by about 80 per cent.

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 September quarter 1998. It indicates the extent to which selected port services were available at the scheduled or confirmed time.

The sample for the September quarter covers 278 ship calls, equivalent to 27 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 20 per cent at Brisbane to 37 per cent at Adelaide. The sample includes calls by container ships operating to and from Europe, the Mediterranean, the Middle East, North America, Asia and New Zealand.

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 91 per cent in the September quarter 1998, up from 68 per cent in the June quarter 1998. Figure 7 provides information on berth availability over the period since this indicator was first published by the BTE.

Average waiting time for ships unable to obtain a berth within four hours of the scheduled berthing time was 15 hours in the September quarter. This was down from the figure of 34 hours recorded during the previous quarter when there was a major dispute involving Patrick and the MUA.

The data for the June and September quarters indicate that berth availability rose significantly at most ports. 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

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

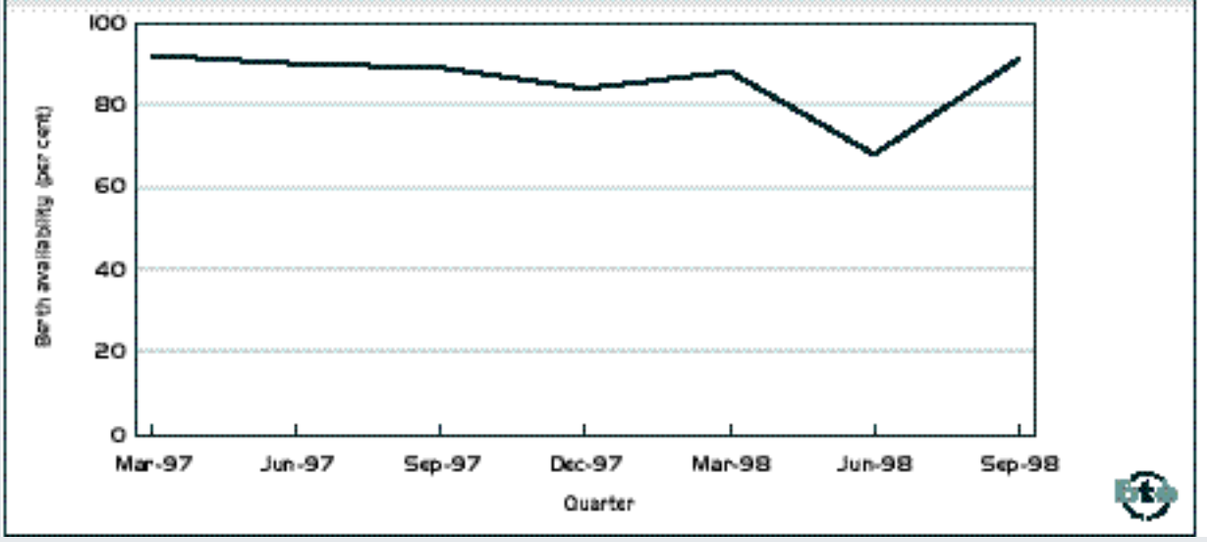
(Number of ship calls)

Port/operation	Delay (hrs) 0	1	2	3	4	5-10	11-20	>20	Total no. of ship calls
Brisbane									
Berth availability	**36**	**0**	**0**	**1**	**1**	0	1	0	39
Pilotage	**39**	**0**	0	0	0	0	0	0	39
Towage	**39**	**0**	0	0	0	0	0	0	39
Sydney									
Berth availability	**60**	**2**	**0**	**1**	**1**	4	5	4	77
Pilotage	**77**	**0**	0	0	0	0	0	0	77
Towage	**77**	**0**	0	0	0	0	0	0	77
Melbourne									
Berth availability	**75**	**0**	**0**	**0**	**0**	3	4	2	84
Pilotage	**84**	**0**	0	0	0	0	0	0	84
Towage	**83**	**0**	0	0	1	0	0	0	84
Adelaide									
Berth availability	**22**	**0**	**0**	**1**	**0**	0	0	0	23
Pilotage	**23**	**0**	0	0	0	0	0	0	23
Towage	**23**	**0**	0	0	0	0	0	0	23
Fremantle									
Berth availability	**52**	**0**	**1**	**0**	**0**	1	1	0	55
Pilotage	**55**	**0**	0	0	0	0	0	0	55
Towage	**55**	**0**	0	0	0	0	0	0	55
Five ports									
Berth availability	**245**	**2**	**1**	**3**	**2**	8	11	6	278
Pilotage	**278**	**0**	0	0	0	0	0	0	278
Towage	**277**	**0**	0	0	1	0	0	0	278

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

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

FIGURE 7 BERTH AVAILABILITY AT MAJOR CONTAINER TERMINALS, 1997 AND 1998



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

ship within one hour of the confirmed ship arrival / departure time. The proportions were effectively unchanged at around 100 per cent in the September quarter 1998.

Other waiting time

The eight 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 (for example, 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 September quarter 1998, 57 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 above the proportions of 51 and 53 per cent that were recorded in the March and June quarters.

Table 3 summarises the data on other waiting time incidents in the September quarter 1998. The shipping lines identified a total of 212 incidents (affecting 159 ship calls) for the sample of ship calls over this period. Around one-quarter of the ship calls that incurred other waiting time were affected by two or more incidents.

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

(Number of incidents)

Incident type	Ship waiting time (hrs) 1	2	3	4	5-10	11-20	>20	Total no. of incidents
Awaiting labour	2	10	8	4	17	9	6	56
Stevedoring finished late	1	2	0	0	14	10	6	33
Stevedoring finished early	4	7	5	4	3	0	0	23
Early ship arrival	1	1	0	2	7	4	4	19
Weather or tides	3	3	0	1	6	2	1	16
Crane breakdown	5	6	3	0	1	0	0	15
Industrial action	1	0	2	1	4	3	1	12
Pilot/tug booking not at preferred time	2	4	0	3	1	0	0	10
Ship repairs or maintenance	1	1	0	0	2	1	5	10
Late ship arrival	0	0	0	0	1	0	0	1
Other	3	5	3	2	3	0	1	17
Total incidents	**23**	**39**	**21**	**17**	**59**	**29**	**24**	**212**[a]

a. *These incidents affected 159 of the 278 ship calls covered in table 2.*

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

The total waiting time attributable to particular incident types reflects the number of incidents and the waiting time associated with individual incidents. In the September quarter 1998, four incident types accounted for around three-quarters of the total hours attributable to other ship waiting time:

- Stevedoring finished late (24 per cent);
- Awaiting labour (24 per cent);
- Ship repairs or maintenance (15 per cent);
- Early ship arrival (14 per cent).

The proportion for ship repairs or maintenance was higher than usual as several ships had major mechanical breakdowns during the quarter.

Stevedoring

Table 4 presents the available information on two aspects of stevedoring reliability at the major container terminals—stevedoring rate and cargo receival. Data are not available for Adelaide or Fremantle.

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 was 56 and 65 per cent at the two ports for which data are available in the September quarter 1998.

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 September quarter 1998, cargo receival ranged between 82 per cent and 97 per cent at the three ports for which data are available.

Information on a third indicator, stevedoring completion, has been included in past issues of Waterline. This indicator provides a partial measure of the accuracy with which stevedoring time is predicted. One of the major terminal operators has advised the BTE that data for the stevedoring completion indicator are no longer available from its data collection system due to major changes in work practices and recording activities. Data for three ports are available from the other major operator but cannot be published due to commercial confidentiality issues.

Ship arrival

Table 4 includes data for two indicators of ship arrival advice. The overall accuracy of this advice was unchanged in the September quarter 1998.

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 49 per cent and 79 per cent in the September quarter 1998.

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 ranged between 88 per cent and 96 per cent in the September quarter 1998.

TABLE 4 STEVEDORING AND SHIP ARRIVAL RELIABILITY INDICATORS, JUNE AND SEPTEMBER QUARTERS 1998

(per cent)

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
Indicator	Apr-Jun	Jul-Sep	Apr-Jun	Jul-Sep	Apr-Jun	Jul-Sep	Apr-Jun	Jul-Sep	Apr-Jun	Jul-Sep
Stevedoring										
Stevedoring completion	na	na	na	na	na	na	na	na	na	na
Stevodoring rate	60	56	58	65	57	na	na	na	na	na
Cargo receival	97	97	93	82	94	97	na	na	na	na
Ship arrival										
Advice at 24 hrs	70	79	46	49	na	na	57	66	57	55
Advice inside 24 hrs	100	96	92	88	na	na	95	94	90	91

na not available

Sources AAPMA, Patrick and P&O Ports

TABLE 5 SINGLE VOYAGE PERMITS ISSUED[a] AND CARGO CARRIED, 1990/91–1997/98

Year	July to Sept		Oct to Dec		Jan to March		April to June		Total	
	Permits	Tonnes	Permits	Tonnes	Permits	Tonnes	Permits	Tonnes	Permits	Tonnes
1990/91	32	195711	38	450622	44	262431	26	189565	140	1098329
1991/92	34	422161	61	414191	49	243049	59	241373	203	1320774
1992/93	62	238017	69	147514	83	211430	93	298769	307	895730
1993/94	108	202252	125	292664	119	412029	118	498571	470	1405516
1994/95	110	899222	112	970068	116	832308	90	665499	428	3367097
1995/96	91	1077022	100	653940	107	575662	123	930077	421	3236701
1996/97	142	1026438	146	1110332	135	661784	149	1056709	572	3855263
1997/98	197	1307369	214	1009151	184	1266030	184	1301204	779	4883754

a. As from January 1998 the data are collected as permits issued; prior to 1998 the data were collected as permits used. Most SVPs issued are used and therefore the differences in the data are not likely to be significant.

Source Maritime Transport Division of the Department of Transport and Regional Services.

SINGLE VOYAGE PERMITS

The Navigation Act 1912 provides for licensed vessels to carry passengers and cargo in the coasting trade. The Act does not restrict the class of vessels which may obtain a Coasting Trade Licence. Any ship, regardless of registry, can obtain a licence provided:

- the crew are paid Australian wages whilst actually engaged in the Australian coasting trade, and
- the ship is not in receipt of a foreign Government subsidy, and did not receive such a subsidy in the previous twelve months.

Ships which obtain a licence must also conform to the requirements of the Navigation Act including specified safety, manning, crew qualifications and rehabilitation and compensation provisions. Where suitable licensed vessels are not available, the Act provides for the issue of single voyage permits (SVP) or continuing voyage permits (CVP) to unlicensed vessels, where this is considered to be in the public interest.

The application fee for a passenger SVP is $22, and $200 for a cargo SVP. The application fee for a CVP is $400.

Table 5 updates the SVP information published in Waterline 14. It provides information on the number of SVPs issued and the cargo carried from 1990/91 to 1997/98. The number of these permits issued has increased over time, by approximately:

- 450 per cent over the past 7 years;
- 150 per cent over the past 5 years;
- 80 per cent over the past 3 years.

This increasing number of permits for the coastal trade reflects an increase in shippers' requirements that cannot be met by local ship operators.

Table 6 shows a breakdown of SVPs by cargo types for the September quarter 1998. Containerised cargo permits continue to be the major component of the number of SVPs issued. Furthermore, over the last three years there has been approximately a 50 per cent increase in volume in all cargo types.

Details of the SVPs for cargo issued during the September quarter 1998, including a summary table showing the number of SVPs issued by cargo type, will be available shortly on the Department's internet site at http://www.dot.gov.au/.

TABLE 6 SINGLE VOYAGE PERMITS ISSUED AND CARGO CARRIED, JULY–SEPTEMBER 1998

Cargo type	Permits	Tonnes
Petroleum products	14	268100
Crude oil and feedstock	7	269917
Liquefied gas	9	25800
Other bulk liquids	7	35900
Dry bulk	19	788550
General cargo		
- containerised	120	187939
- break bulk	10	8034
Total	186	1584240

Source Maritime Transport Division of the Department of Transport and Regional Services.

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

The overall crew to berth ratio for merchant shipping rose to 2.137 in the September quarter, compared with 2.102 in the June quarter, and 2.133 in the initial September quarter 1993.

Table 7 shows the individual components of the crew to berth ratio for merchant shipping, by crew classification, for the September 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 rose to 1.041 in the September quarter, compared with 1.020 in the June 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 rose to 0.972 in the September quarter, compared with 0. 951 in the June quarter.

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

- Compensation leave, which fell to 0.052, compared with 0. 060 in the June quarter;
- Long service leave, which rose to 0.035, compared with 0.034 in the June quarter;
- Study leave, which remained constant at 0.031; and
- Training and other paid leave, which fell to 0.006, compared with 0.007 in the June quarter.

Offshore shipping

Figure 9 presents information on the crew to berth ratio, and its components, for Australian offshore shipping. As the BTE is still auditing the data, the September quarter 1998 offshore shipping data in this issue of Waterline are classified as preliminary.

The overall crew to berth ratio for offshore shipping fell to 2.317 in the September quarter 1998, compared with 2. 322 in the June quarter, and 2.327 in the initial March quarter 1995.

Table 8 shows the individual components of the crew to berth ratio for offshore shipping, by crew classification, for the September 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 September quarter rose to 1.154, compared with 1.153 in the June quarter.

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 September quarter was 1.011, compared with 1. 017 in the June quarter.

Other components of the offshore crew to berth ratio, namely, compensation leave, long service leave, study leave, and training and other leave, all remained constant in the September quarter when compared with the June quarter.

FIGURE 8 CREW TO BERTH RATIOS—AUSTRALIAN MERCHANT SHIPPING

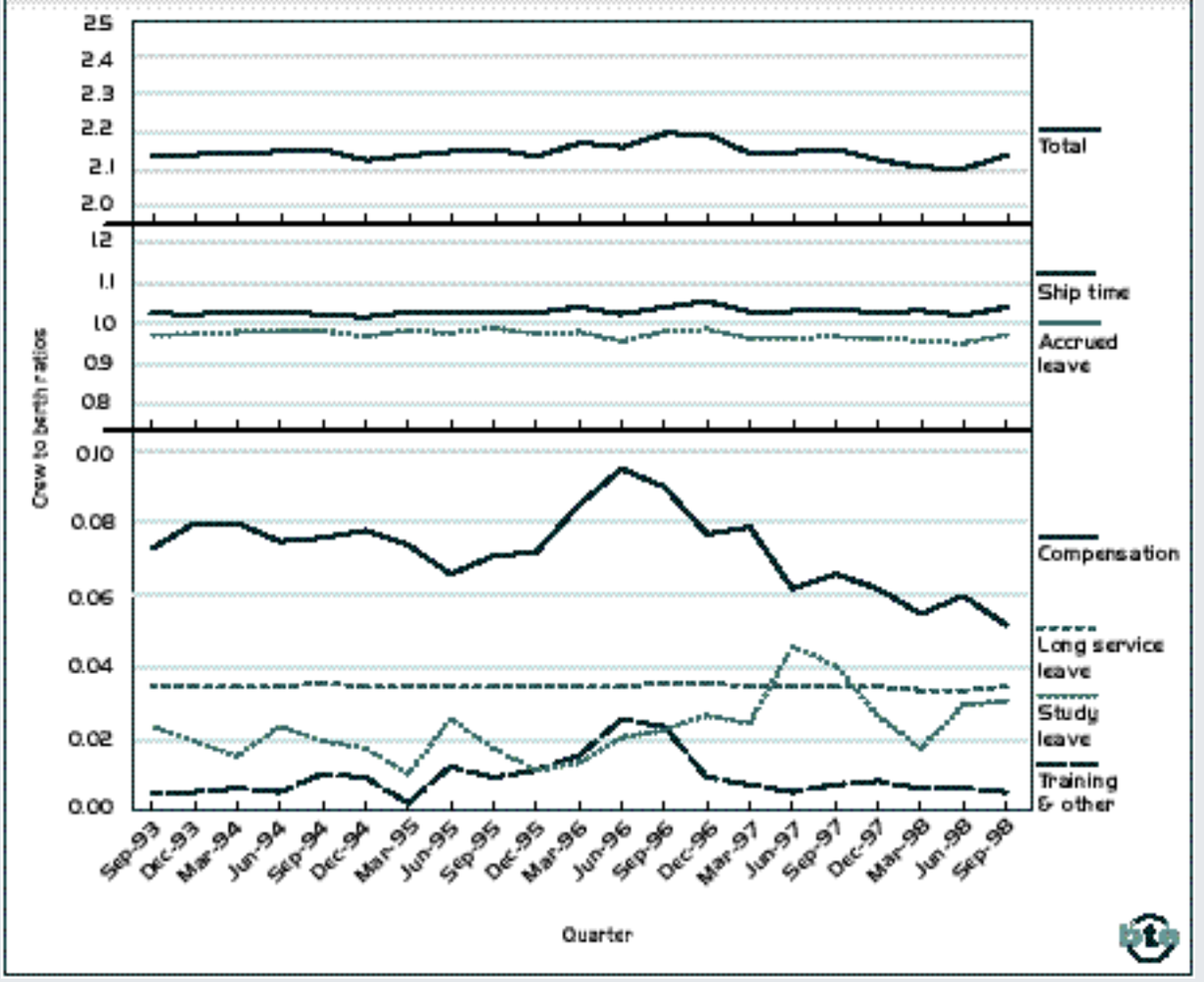


TABLE 7 MERCHANT SHIPPING CREW TO BERTH RATIOS BY ACTIVITY AND CREW CLASSIFICATION, SEPTEMBER QUARTER 1998P

Crew type	Ship time	Accrued leave	Compen-sation	Long service leave	Study leave	Training & other	Total[a]
Deck officers	1.052	0.978	0.015	0.035	0.030	0.021	2.131
Engineers	1.051	0.977	0.054	0.036	0.106	0.006	2.231
All officers	**1.052**	**0.978**	**0.035**	**0.036**	**0.069**	**0.013**	**2.182**
Integrated ratings	1.036	0.970	0.062	0.034	0.000	0.000	2.102
Catering crew	1.025	0.960	0.074	0.034	0.000	0.001	2.094
All ratings	**1.032**	**0.967**	**0.066**	**0.034**	**0.000**	**0.000**	**2.100**
All crew	**1.041**	**0.972**	**0.052**	**0.035**	**0.031**	**0.006**	**2.137**
Previous quarter	1.020	0.951	0.060	0.034	0.031	0.007	2.102
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.

FIGURE 9 CREW TO BERTH RATIOS—AUSTRALIAN OFFSHORE SHIPPING

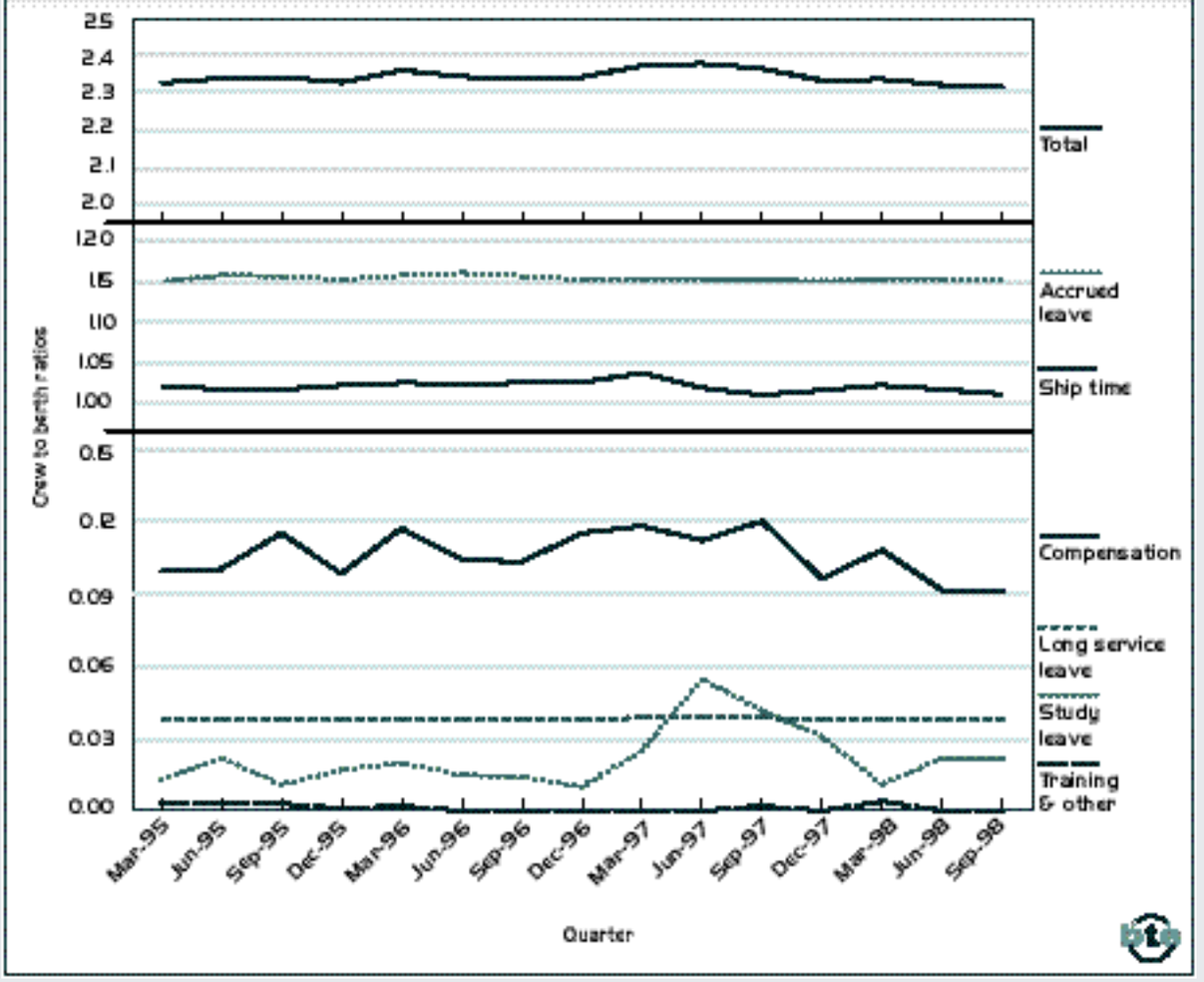


TABLE 8 OFFSHORE SHIPPING CREW TO BERTH RATIOS BY ACTIVITY AND CREW CLASSIFICATION, SEPTEMBER QUARTER 1998[p]

Crew type	Ship time	Accrued leave	Compen-sation	Long service leave	Study leave	Training & other	Total[a]
Deck officers	1.009	1.154	0.049	0.037	0.035	0.000	2.285
Engineers	1.010	1.154	0.010	0.037	0.056	0.000	2.268
All officers	**1.009**	**1.154**	**0.030**	**0.037**	**0.046**	**0.000**	**2.276**
Integrated ratings	1.012	1.154	0.127	0.038	0.000	0.000	2.330
Catering crew	1.022	1.153	0.357	0.042	0.000	0.000	2.575
All ratings	**1.013**	**1.154**	**0.151**	**0.039**	**0.000**	**0.000**	**2.357**
All crew	**1.011**	**1.154**	**0.092**	**0.038**	**0.022**	**0.000**	**2.317**
Previous quarter	1.017	1.153	0.092	0.038	0.022	0.000	2.322
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.

ABBREVIATIONS

AAPMA	Association of Australian Ports and Marine Authorities
BTE	Bureau of Transport Economics
IRS	Information and Research Services
MUA	Maritime Union of Australia
SVP	Single Voyage Permit
teu	Twenty-foot equivalent unit

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.

TABLE 9 CONTAINER TERMINAL PERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS—PRODUCTIVITY IN TEUS PER HOUR

	Sep-95	Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-98	Sep-98
Five ports													
Ships handled	721	728	748	827	871	907	865	891	907	963	909	845	1020
Total teus	433594	425731	411538	440098	497140	519206	441697	483372	549247	585474	527881	514409	633107
Crane rate	19.5	19.2	20.3	21.3	22.3	21.2	22.8	22.8	23.2	23.3	23.5	23.6	24.4
Elapsed rate	22.5	21.7	23.2	22.6	23.6	na	23.1	23.8	26.0	25.8	na	na	na
Net rate	26.5	25.3	27.1	28.5	29.1	27.2	29.0	29.5	31.0	30.8	29.6	31.3	31.3
Brisbane													
Ships handled	135	132	124	133	140	141	156	164	162	177	170	168	192
Total teus	58851	46439	39037	51008	66115	62904	47471	65572	73184	71043	58857	74023	87373
Crane rate	18.6	18.9	20.0	19.9	20.6	20.6	20.0	20.5	20.2	20.5	21.6	21.6	22.5
Elapsed rate	19.5	21.0	21.5	20.5	20.9	21.1	20.3	20.6	21.2	20.8	19.9	21.5	23.6
Net rate	22.5	24.6	24.4	24.3	25.1	24.9	22.7	23.3	24.0	24.2	23.0	25.4	27.5
Sydney													
Ships handled	192	203	206	216	228	249	251	249	243	266	238	219	267
Total teus	148431	143746	146038	148290	156344	174982	158323	167705	183978	201535	176496	168234	209619
Crane rate	19.3	18.5	19.5	19.9	20.3	19.6	22.3	20.5	23.5	23.5	22.5	21.8	21.6
Elapsed rate	23.4	21.8	23.8	22.1	23.1	na	22.7	23.6	28.0	28.2	25.6	26.1	25.4
Net rate	29.9	25.7	28.0	27.9	29.5	28.9	22.7	23.3	36.1	35.5	33.1	33.9	32.0
Melbourne													
Ships handled	221	227	228	262	274	282	230	249	268	281	276	234	309
Total teus	161943	173566	162911	170884	203371	202376	162156	177070	208200	223465	207346	185803	242456
Crane rate	19.8	19.6	20.5	22.3	24.5	22.4	23.6	23.5	23.6	23.6	24.3	24.3	26.1
Elapsed rate	24.1	22.8	24.4	25.0	26.5	22.1	24.3	25.1	26.0	25.2	25.3	26.8	28.4
Net rate	26.6	26.4	28.3	31.7	32.2	27.2	28.7	29.7	29.9	28.7	28.6	30.7	31.9
Adelaide													
Ships handled	34	42	47	63	70	74	69	65	68	66	60	66	63
Total teus	14319	17318	15955	18803	20519	23351	21963	20933	25982	25188	22260	27975	25493
Crane rate	20.9	21.4	21.5	21.5	22.7	24.0	24.6	26.0	26.1	26.0	27.5	27.7	27.6
Elapsed rate	24.9	26.1	26.6	26.1	26.2	27.7	30.2	35.1	35.2	35.4	36.3	36.5	34.5
Net rate	26.5	26.7	27.2	26.7	26.8	28.3	30.9	36.0	36.2	36.5	37.6	37.8	36.0
Fremantle													
Ships handled	139	124	143	153	159	161	159	164	166	173	165	158	189
Total teus	50050	44662	47597	51113	50791	55593	51784	52092	57903	64243	62922	58374	68166
Crane rate	19.5	19.2	21.2	23.4	20.8	21.5	23.3	22.9	23.1	23.6	24.5	26.7	27.9
Elapsed rate	17.7	15.8	18.3	17.6	16.0	18.6	19.7	19.5	21.0	22.2	na	na	na
Net rate	21.1	19.8	22.2	23.5	22.6	24.2	25.0	24.0	25.5	28.8	26.4	29.8	30.2

na *not available*

Notes *1. The June quarter 1998 figures do not include data for Patrick covering the 8 April to 7 May 1998 period of the major industrial disputation with the MUA.*

2. 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.

3. For data back to the December quarter 1989, refer to Waterline 15.

Sources *Patrick, P&O Ports and Sea-Land.*

From all of us in the Waterline team

Greetings of the Season and Best Wishes for the Coming Year

ACKNOWLEDGMENTS

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For further information on this publication please contact Anthony Carlson at tcarlson@email.dot.gov.au or tel (02) 6274 6628 fax (02) 6274 6816.

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