The Port of New York and New Jersey Cargo Handling Equipment Emissions Inventory Update

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THE PORT AUTHORITY
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ACRONYMS AND ABBREVIATIONS

CHE	cargo handling equipment
CTN	container terminal number
CO	carbon monoxide
EF	Emission Factor
EI	Emission Inventory
EPA	United States Environmental Protection Agency
g/hp-hr	grams per horsepower-hour
hp	horsepower
hp-hrs	horsepower-hours
hrs	hours
lb/hr	pound per hour
NAAQS	National Ambient Air Quality Standard
NO_X	nitrogen oxides
PANYNJ	Port Authority of New York and New Jersey
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
RTG	rubber tired gantry (crane)
SCC	Source Category Code
SO_2	sulfur dioxide
tpy	tons per year
U.S.	United States
VOC	volatile organic compound

DISCLAIMER

This report does not necessarily reflect the views and policies of the Port Authority of New York and New Jersey, the New York State Department of Environmental Conservation, the New Jersey Department of Environmental Protection, the United States Army Corps of Engineers, or the United States Environmental Protection Agency.

DATA CONFIDENTIALITY STATEMENT

Due to heightened port security and anti-competition concerns, results are aggregated, or are reported so as to make the identity of individual terminals indiscernible.

EXECUTIVE SUMMARY

Air pollutant emissions were estimated for the cargo handling equipment (CHE) associated with five commercial marine container terminals in the New York and New Jersey Harbor. These terminals are located in Kings and Richmond Counties, New York; and Essex and Union Counties, New Jersey. Baseline emission estimates were developed for oxides of nitrogen (NO_X), volatile organic compounds (VOC), carbon monoxide (CO), particulate matter less than 10 microns (PM_{10}) and sulfur dioxide (SO_2). The baseline year for the original inventory[1] was 2002; this report updates that inventory with data from 2004.

The emission estimation procedures used in the update are the same ones used in the prior inventory, which were developed in coordination with, and were approved by, the New Jersey Department of Environmental Protection, the New York State Department of Environmental Conservation, and the United States Environmental Protection Agency (EPA), Region 2.

Although the number of pieces of equipment in the fleet increased by 19%, average operating hours increased by 5%, and the total number of containers moved increased by 25%, because of fleet modernization overall emissions for the five terminals have been reduced significantly when compared to the 2002 baseline emissions inventory. Emissions estimates for key pollutants in tons per year (tpy) are presented in Table ES.1 and Figure ES.1. Reductions in pollutant emissions from 2002 to 2004 are as follows:

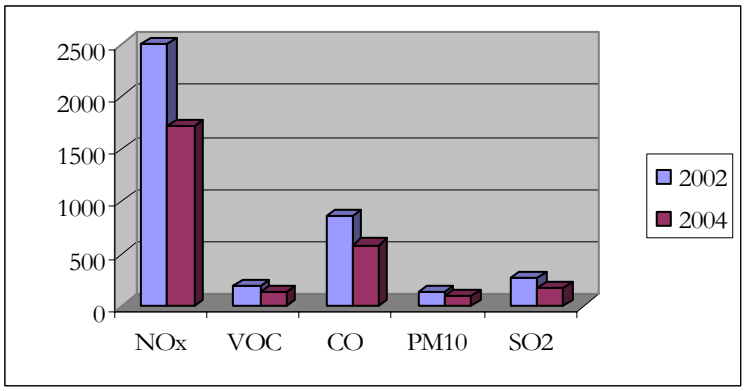
- NOx – 31% reduction
- VOC – 32% reduction
- CO – 32% reduction
- PM_{10} – 32% reduction
- SO_2 – 35% reduction

Table ES.1: 2002 and 2004 Emissions Comparison, by Terminal and Pollutant, tpy

	NOx			VOC			CO			PM_{10}			SO_2		
Terminal	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**
CTN010	199	184	7.6%	14	13	6.4%	67	61	9.4%	11	10	8.9%	45	33	26.5%
CTN020	448	325	27.5%	32	23	26.3%	161	91	43.6%	26	20	23.2%	112	67	39.9%
CTN030	277	177	36.0%	20	14	32.2%	81	66	18.8%	14	9	40.3%	5	4	21.7%
CTN040	1,461	967	33.8%	122	75	38.2%	516	354	31.5%	81	52	35.2%	106	70	33.8%
CTN050	115	61	46.9%	8	8	0.0%	37	17	53.9%	7	3	53.7%	3	1	66.7%
Total	2,499	1,713	31.4%	196	134	31.8%	863	588	31.8%	139	94	32.3%	270	175	35.3%

[1] Starcrest Consulting Group, LLC, *The Port Authority of New York & New Jersey Emissions Inventory for Container Terminal Cargo Handling Equipment, Automarine Terminal Vehicles, and Associated Locomotives*, June 2003 (under contract to Hatch Mott MacDonald).

Figure ES.1: 2002 and 2004 Emissions Comparison, Total by Pollutant, tpy



For 2004, 966 pieces of CHE were associated with 2,930,911 container moves in the five container terminals. This compares to 813 pieces of CHE associated with 2,350,000 container moves for the same five terminals in 2002. Although the number of pieces of equipment in the total fleet increased by 153, the average age decreased by two years – from model year 1997 in 2002 to model year 1999 in 2004. The average horsepower for the fleet remained essentially constant at 243 hp in 2002 and 245 hp in 2004, and the average annual operating hours increased from 2,415 hrs to 2,533 hrs per year.

All of the terminals, except one (CTN010) increased container moves and decreased their ratio of emissions to container moves. For the five terminals overall, tons of NOx, VOC, CO, PM_{10} and SO_2 per 1,000-container moves were reduced by 45 to 48 percent. Table ES.2 compares the activity ratios by pollutant for each terminal for 2002 and 2004.

Table ES.2: 2002 and 2004 Activity Ratio Comparison, per 1,000-container moves

	NOx			VOC			CO			PM_{10}			SO_2		
Terminal	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**
CTN010	0.57	0.71	-24.4%	0.04	0.05	-26.0%	0.19	0.23	-22.0%	0.03	0.04	-22.9%	0.13	0.13	1.1%
CTN020	0.76	0.52	32.1%	0.05	0.04	31.0%	0.27	0.15	47.3%	0.04	0.03	28.2%	0.19	0.11	43.8%
CTN030	1.03	0.48	53.1%	0.07	0.04	50.3%	0.30	0.18	40.5%	0.05	0.02	56.2%	0.02	0.01	42.6%
CTN040	1.46	0.64	55.9%	0.12	0.05	58.8%	0.52	0.24	54.3%	0.08	0.03	56.8%	0.11	0.05	55.8%
CTN050	0.80	0.35	56.7%	0.06	0.05	18.4%	0.26	0.10	62.4%	0.05	0.02	62.5%	0.02	0.01	73.1%
Average	1.06	0.58	45.0%	0.08	0.05	45.3%	0.37	0.20	45.3%	0.06	0.03	45.7%	0.12	0.06	48.1%

SECTION 1 INTRODUCTION

The Port Authority of New York and New Jersey (PANYNJ) originally commissioned the 2002 Cargo Handling Equipment Emission Inventory[2] (CHE EI) to quantify emissions associated with PANYNJ container terminal and other tenants as part of their obligation under the Conditional Statement of General Conformity[3] for the New York-New Jersey Harbor Deepening Project. This inventory focuses on updating the non-road cargo handling equipment (CHE) portion of the prior inventory for the container terminals.

As in 2002, the basic approach was to develop an "activity-based" emissions inventory from data gathered from terminal representatives regarding non-road CHE involved in the movement of containers to and from containerships and within the container terminals, as well as ancillary equipment not directly used for handling cargo. Five of the six original terminals have been included in this updated inventory; the sixth was excluded because it is a private, non-tenant, entity. The scope of this emission inventory includes the entities listed below:

- American Stevedoring, Inc. (ASI)/Red Hook Terminal
- New York Container Terminal (NYCT)/Howland Hook Terminal
- APM Terminal (formerly Maersk-Sealand)
- Maher Terminal
- Port Newark Container Terminal (PNCT)

The source categories include cranes, fork lifts, terminal tractors, and other landside support equipment. The five container terminals covered by the emissions inventory were identified by container terminal number (CTN), and designated as CTN010 to CTN050. The baseline year used in the original inventory was 2002; this inventory uses 2004 equipment inventories and operating hours to update the original emissions estimates.

This report is organized as follows:

- Section 2 describes equipment and fuel types inventoried.
- Section 3 discusses the data collection process.
- Section 4 describes the emission estimation methodology.
- Section 5 presents a comparison of 2002 and 2004 emission estimates and activity ratios.

[2] Starcrest Consulting Group, LLC, *The Port Authority of New York & New Jersey Emissions Inventory for Container Terminal Cargo Handling Equipment, Automarine Terminal Vehicles, and Associated Locomotives*, June 2003 (under contract to Hatch Mott MacDonald).
[3] "Clean Air Act Conditional Statement of Conformity New York and New Jersey Harbor Navigation Project," 2002, *http://www.nan.usace.army.mil/news/newsrels/soc1Apr.pdf.*

SECTION 2 EQUIPMENT AND FUEL TYPES

This section discusses the types of CHE and fuel used at the container terminals. Section 2.1 discusses the types of equipment used and Section 2.2 summarizes the types of fuels used.

2.1 Equipment Types

The equipment inventoried for the container terminals was limited to diesel-powered landside equipment greater than 25 horsepower (hp) and not licensed for highway use. For both 2002 and 2004, 15 types of diesel-powered equipment were identified by the terminal operators, including:

- Terminal tractors
- Straddle carriers
- Fork lifts
- Top loaders
- Empty container handlers
- Non-road vehicles
- Rubber tired gantry cranes
- Portable light sets
- Wharf cranes
- Aerial platforms
- Payloaders
- Chassis rotators
- Bucket loaders
- Sweepers
- Generators

A detailed list of equipment, including model year, horsepower, and annual operating hours, is presented in Appendix A. Figure 2.1 illustrates the distribution of the 966 pieces of non-road CHE by survey type, ranging from model year 1968 to 2004. This contrasts to the 2002 inventory which included 813 pieces with model years ranging from 1970 to 2003, as shown in Figure 2.2. Table 2.1 contrasts and compares the 2004 and 2002 fleet characteristics in terms of equipment count, model years, horsepower, and annual operating hours. Section 2.1.1 describes the equipment used directly in handling cargo or primary non-road equipment. Section 2.1.2 describes ancillary equipment, that is, equipment that is used for work associated with terminal operations, but that does not directly handle the cargo.

The 2002 values presented below vary from those in the original report because one terminal, a private non-tenant entity, was removed. Also, averages were calculated from all pieces of equipment within a given category rather than as averages of terminal averages for a given category as in the original report. During the process of developing the 2004 update, it was discovered that 85 straddle carriers from one terminal (CTN040) were reported at 184 horsepower (hp) instead of the 368 hp they actually are. The 2002 emissions have been corrected to include the additional emissions associated with these pieces of equipment.

Figure 2.1: Distribution of Equipment by Survey Type, 2004

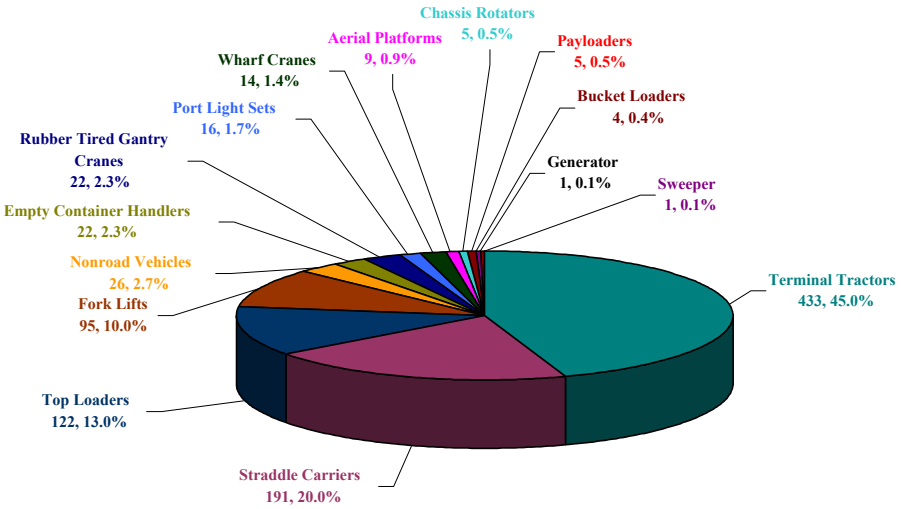


Figure 2.2: Distribution of Equipment by Survey Type, 2002

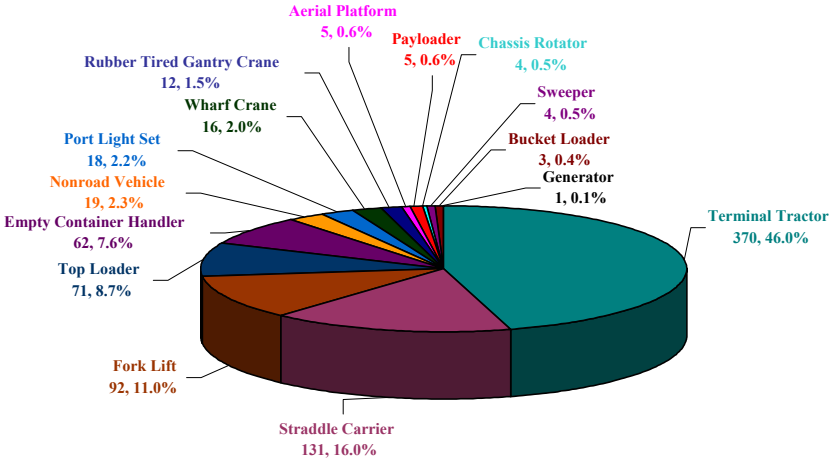


Table 2.1: Cargo Handling Equipment Characteristics, 2004 and 2002 Comparison

	2004					2002				
Equipment Type	**No.**	**% Inv**	**MY**	**HP**	**Hours**	**No.**	**% Inv**	**MY**	**HP**	**Hours**
Terminal tractor	433	45%	1985-2004	170-425	35-3,600	370	46%	1986-2003	170-425	35-3,600
Straddle carrier	191	20%	1996-2004	320-432	2,400-3,500	131	16%	1996-2002	368-432	2,400-3,500
Top loader	122	13%	1970-2004	152-330	800-3,800	71	8.7%	1970-2001	145-330	1,000-3,600
Fork lift	95	10%	1970-2004	40-250	150-4,700	92	11%	1970-2002	40-226	150-2,600
Nonroad vehicle	26	2.7%	1979-2003	40-240	800-2,000	19	2.3%	1979-2003	48-240	800-2,000
Empty container handler	22	2.3%	1989-2004	152-225	600-2,548	62	7.6%	1987-2001	145-330	600-2,800
Rubber tired gantry crane	22	2.3%	1992-2003	450-475	4,680	12	1.5%	1985-2001	450-685	3,120
Portable light set	16	1.7%	1998-2001	30-50	200-1,200	18	2.2%	1987-2001	22-50	200-1,200
Wharf crane	14	1.4%	1968-2000	500-1750	500-5,800	16	2.0%	1978-2000	835-1750	900-5,800
Aerial platform	9	0.9%	1989-2004	42-180	1,000-2,000	5	0.6%	1998-2002	42-53	2,000
Chassis rotator	5	0.5%	1996-2003	152-160	2,000-2,500	4	0.5%	1996-2001	152-160	2,500
Payloader	5	0.5%	2003-2004	38	1,000	5	0.6%	1993-1999	36	500
Bucket loader	4	0.4%	1986-1997	125-140	100-700	3	0.4%	1987-1997	135-140	100
Generator	1	0.1%	2003	610	500	1	0.1%	1996	755	520
Sweeper	1	0.1%	1996	140	1,000	4	0.5%	1993-2002	60-100	1,000-2,080

2.1.1 Primary Non-road Equipment

The equipment used directly in handling cargo consists of terminal tractors, straddle carriers, fork lifts, top loaders, empty container handlers, rubber tired gantry cranes, wharf cranes, and chassis rotators.

2.1.1.1 Terminal Tractors

In 2002, terminal tractors accounted for almost half (46 percent or 370 units) of the CHE used at the five terminals. In 2004, the inventory included 433 terminal tractors, representing 45 percent of the CHE used.

In 2002, model years ranged from 1986 to 2003, with the average model year being 1998. Engine power ranged from 170 hp to 425 hp. Annual operating time ranged from 35 hours (hrs) to 3,600 hrs for the five container terminals, all of which had terminal tractors in their inventory. The number of tractors at the terminals ranged from 29 to 149.

In 2004, model years ranged from 1985 to 2004, with the average model year being 2000. The horsepower range and annual operating times were the same as in 2002. The number of tractors at the terminals ranged from 48 to 145.

Terminal tractors were modeled under the "terminal tractor" category, USEPA source category code (SCC) 2270003070, in the NONROAD model.

2.1.1.2 Straddle Carriers

The next largest category of equipment for both years was straddle carriers, accounting for 16 percent of the equipment inventoried, or 131 units in 2002. In 2004, straddle carriers represented 20% of the inventory, or 191 units.

In 2002, the model years for the straddle carriers inventoried ranged from 1996 to 2002, with an average of 2000. Engine power ranged from 368 hp to 432 hp, and annual operating time ranged from 2,400 hrs to 3,500 hrs. In the 2002 inventory, 85 straddle carriers from one terminal were modeled at 184 hp. During the process of developing the 2004 inventory, it was determined that these units should have been modeled at double that horsepower (thus accounting for the increase in the minimum horsepower noted in the range above). The 2002 emissions estimates used in this report have been corrected to include the additional emissions the horsepower correction represents. Straddle carriers were present at two of the five terminals, one having 45, the other 86.

In 2004, the model years for the straddle carriers inventoried ranged from 1996 to 2004, with an average of 2001. Engine power ranged from 320 hp to 432 hp, and annual operating time was the same as in 2002. Straddle carriers were present at two of the five terminals, one having 54, the other 137.

Straddle carriers, along with rubber tired gantry cranes, were modeled under the category "other material handling equipment", SCC 2270003050, in the NONROAD model.

2.1.1.3 Fork Lifts

Approximately 11 percent, or 92 units, of the equipment inventoried were fork lift trucks in 2002. In 2004, 95 fork lifts represented 10 percent of the inventory.

In 2002, model years ranged from 1970 to 2002, with an average of 1994. Engine power ranged from 40 hp to 226 hp, and annual operating time ranged from 150 hrs to 2,600 hrs. The number of fork lifts ranged from three to 43 across the five terminals.

In 2004, model years ranged from 1970 to 2004, with an average of 1997. Engine power ranged from 40 hp to 250 hp, and annual operating time ranged from 150 hrs to 4,700 hrs. The number of fork lifts ranged from three to 46 across the five terminals.

Fork lifts were modeled under the category "forklift", SCC 2270003020, in the NONROAD model.

2.1.1.4 Top Loaders

Approximately nine percent, or 71 units, of the equipment inventoried were top loaders in 2002. In 2004, 13 percent, or 122 units, of the inventory were top loaders.

In 2002, model years ranged from 1970 to 2001, with an average of 1995. Engine power ranged from 145 hp to 330 hp, and annual operating time ranged from 1,000 hrs to 3,600 hrs. Top loaders were present at four of the five container terminals, ranging in number from four to 34.

In 2004, model years ranged from 1970 to 2004, with an average of 1998. Engine power ranged from 152 hp to 330 hp, and annual operating time ranged from 800 hrs to 3,800 hrs. Top loaders were present at all of the five container terminals, ranging in number from five to 58.

Top loaders, along with empty container handlers and chassis rotators, were modeled under the category "other industrial equipment", SCC 2270003040, in the NONROAD model.

2.1.1.5 Empty Container Handlers

Approximately seven and a half percent, or 62 units, of the equipment inventoried were empty container handlers in 2002. In 2004, 22 units, or just over two percent of the equipment, were empty container handlers.

In 2002, model years ranged from 1987 to 2001, with an average of 1997. Engine power ranged from 145 hp to 330 hp, and annual operating time ranged from 600 hrs to 2,800 hrs. All of the five container terminals had empty container handlers in their CHE inventory, ranging in number from four to 31.

In 2004, model years ranged from 1989 to 2004, with an average of 2000. Engine power ranged from 152 hp to 225 hp, and annual operating time ranged from 600

hrs to 2,548 hrs. Three of the five container terminals had empty container handlers in their CHE inventory, ranging in number from seven to eight.

In 2002, during the quality assurance review process, one terminal operator noted that the 14 top loaders and reach stackers at the facility were incorrectly categorized as empty container handlers. Since the total equipment count remained the same, and because any change in emission estimates would have been insignificant, the modeling was not re-run. This would account for some of the decrease in the number of empty container handlers and increase in the number of top loaders from 2002 to 2004.

Empty container handlers, along with top loaders and chassis rotators, were modeled under the category "other industrial equipment", SCC 2270003040, in the NONROAD model.

2.1.1.6 Rubber Tired Gantry (RTG) Cranes

One and one-half percent, or 12 units, of the equipment inventoried were RTG cranes in 2002. In 2004, just over two percent or 22 units were RTG cranes.

In 2002, model years ranged from 1985 to 2001, with an average of 1996. Engine power ranged from 450 hp to 685 hp, and annual operating times for all pieces were 3,120 hrs. One terminal identified RTG cranes in their inventory.

In 2004, model years ranged from 1992 to 2003, with an average of 2001. Engine power ranged from 450 hp to 475 hp, and annual operating times for all pieces were 4,680 hrs. The same terminal identified RTG cranes in their 2004 inventory.

RTG cranes, along with straddle carriers, were modeled under the category "other material handling equipment", SCC 2270003050, in the NONROAD model.

2.1.1.7 Wharf Cranes

Two percent, or 16 units, of the equipment inventoried were wharf cranes in 2002. In 2004, there were 14 wharf cranes, accounting for 1.4 percent of the inventory.

In 2002, model years ranged from 1978 to 2000, with an average of 1989. Engine power ranged from 835 hp to 1,750 hp, and annual operating time ranged from 900 hrs to 5,800 hrs. Four of the five container terminals inventoried had wharf cranes, ranging in number from two to seven.

In 2004, model years ranged from 1968 to 2000, with an average of 1987. Engine power ranged from 500 hp to 1,750 hp, and annual operating time ranged from 500 hrs to 5,800 hrs. Four of the five container terminals inventoried had wharf cranes, ranging in number from one to seven.

The 2004 inventory shows a 1968 dock crane not present in the 2002 inventory. The 1968 crane was present at the same terminal in 2002, however, it did not have any operating hours associated with it and was thus not included as part of the inventory.

Wharf cranes were modeled as category "crane", SCC 2270002045, in the NONROAD model.

2.1.1.8 Chassis Rotators

One half of one percent of the CHE was identified as chassis rotators in both the 2002 and 2004 inventories; four in 2002 and five in 2004.

In 2002, model years ranged from 1996 to 2001, with an average of 1999. Engine power averaged 156 hp, and annual operating time averaged 2,500 hrs. Only one terminal identified dedicated chassis rotators in their inventory.

In 2004, model years ranged from 1996 to 2003, with an average of 2000. Engine power averaged 156 hp, and annual operating time averaged 2,400 hrs. As in the previous inventory, only one terminal identified dedicated chassis rotators in their inventory.

Chassis rotators, along with top loaders and empty container handlers, were modeled under the category "other industrial equipment", SCC 2270003040, in the NONROAD model.

2.1.2 Ancillary Equipment

Ancillary equipment, or equipment not directly used to handle cargo, includes non-road vehicles, portable light sets, aerial platforms, payloaders, bucket loaders, sweepers, and generators.

2.1.2.1 Non-road Vehicles

Just over two percent, or 19 units, were identified as non-road vehicles in 2002. In 2004, 26 non-road vehicles represented almost three percent of the inventory.

In 2002, model years ranged from 1979 to 2003, with an average of 1998. Engine power ranged from 48 hp to 240 hp, and annual operating time ranged from 800 hrs to 2,000 hrs. Two of the five container terminals identified non-road vehicles, one at one location and 18 at the other.

In 2004, model years ranged from 1979 to 2003, with an average of 1999. Engine power ranged from 40 hp to 240 hp, and annual operating time ranged from 800 hrs to 2,000 hrs. Two of the five container terminals identified non-road vehicles, three at one location and 23 at the other.

The non-road vehicles were categorized as "off-road trucks", SCC 2270002051, in the NONROAD model.

2.1.2.2 Portable Light Sets

Approximately two percent, or 18 units, of the inventoried equipment were identified as portable light sets in 2002. In 2004, 16 units represented just under two percent of the inventory.

In 2002, model years ranged from 1987 to 2001, with an average of 1999. Engine power ranged from 22 hp to 50 hp, and annual operating time ranged from 200 hrs to 1,200 hrs. Two of the five container terminals identified portable light sets, two at one location and 16 at the other.

In 2004, model years ranged from 1998 to 2001, with an average of 2000. Engine power ranged from 30 hp to 50 hp, and annual operating time ranged from 200 hrs to 1,200 hrs. Two of the five container terminals identified portable light sets, two at one location and 14 at the other.

The portable light sets were categorized as "signal board/light plant", SCC 2270002027, in the NONROAD model.

2.1.2.3 Aerial Platforms

Approximately one-half of one percent of the equipment inventoried, or five units, were identified as aerial platforms in 2002. In 2004, nine units represented almost one percent of the inventory.

In 2002, model years ranged from 1998 to 2002, with an average of 2000. Engine power ranged from 42 to 53 hp, and annual operating time for all units was 2,000 hrs each. One terminal identified aerial platforms in their inventory.

In 2004, model years ranged from 1989 to 2004, with an average of 1999. Engine power ranged from 42 to 180 hp, and annual operating time ranged from 1,000 to 2,000 hrs. Two terminals identified aerial platforms in their inventory; one had three, the other six.

Aerial platforms were categorized as "aerial lift" SCC 2270003010, in the NONROAD model.

2.1.2.4 Payloaders

One terminal identified five payloaders in 2002 and in 2004.

In 2002, model years ranged from 1993 to 1999, with an average of 1995. Engine power was 36 hp, and annual operating time was 500 hrs for each unit.

In 2004, model years ranged from 2003 to 2004, with an average of 2003. Engine power was 38 hp, and annual operating time 1,000 hrs per unit. One unit, for CTN040, was inadvertently assigned an annual operating time of 10,000 hrs, instead of the actual 1,000 hrs in operated. This was determined to be incorrect after the modeling was completed; the emissions estimates were not corrected as the emissions associated with the extra operating hours are insignificant.

Although the same terminal had five units in 2002 and 2004, a review of the detailed inventories provided by that terminal indicates that the five units are not the same, but are different makes and models with different terminal identification numbers, thus accounting for the difference in model years and horsepowers.

The payloaders were categorized as "skid-steer loader," SCC 2270002072, in the NONROAD model.

2.1.2.5 Bucket Loaders

One terminal identified three bucket loaders in 2002, and two terminals identified a total of four bucket loaders in 2004.

In 2002, model years ranged from 1987 to 1997, with an average of 1994. Engine power ranged from 135 to 140 hp, and annual operating time was 100 hrs for each unit.

In 2004, model years ranged from 1986 to 1997, with an average of 1992. Engine power ranged from 125 to 140 hp, and annual operating time ranged from 100 hrs to 700 hrs.

The bucket loaders were categorized as "rubber tired loader," SCC 2270002060, in the NONROAD model.

2.1.2.6 Sweepers

Four street sweepers were identified in 2002; three at one terminal and one at another. In 2004, only one sweeper was inventoried.

In 2002, model years ranged from 1993 to 2002, with an average of 1997. Engine power ranged from 60 hp to 100 hp, and annual operating time ranged from 1,000 to 2,080 hrs.

The sweeper identified in the 2004 inventory had a model year of 1996, engine power of 140 hp, and annual operating time of 1,000 hrs.

The sweepers were categorized as "sweeper/scrubber," SCC 2270003030, in the NONROAD model.

2.1.2.7 Generators

One terminal identified a generator in their inventory in 2002 and a different terminal identified a generator in their inventory in 2004.

In 2002, the generator was model year 1996 and had an engine power of 755 hp and an annual operating time of 520 hrs.

In 2004, the generator was model year 2003 and had an engine power of 610 hp and an annual operating time of 500 hrs.

The generators were categorized as "light commercial generator set," SCC 2270006005, in the NONROAD model.

2.2 Fuel Types

Fuel type is an important variable because it has a significant effect on emission estimates, with higher concentrations of sulfur resulting in higher levels of and SO_2 and PM_{10} emissions. Several types of diesel fuel may be used in non-road engines:

- dyed non-road diesel (3,400 ppm sulfur, with a maximum of 5000 ppm)
- un-dyed highway diesel (340 ppm sulfur, with a maximum of 500 ppm)
- ultra-low sulfur diesel (ULSD) (about 30 ppm or less sulfur)

In 2002, the container terminals surveyed used either the dyed non-road diesel fuel or the un-dyed highway diesel fuel. Two of the five terminals used exclusively dyed non-road diesel to fuel their CHE; two terminals used exclusively un-dyed highway diesel; and one terminal used dyed non-road diesel to fuel their cranes, and un-dyed highway diesel for all other CHE. None of the terminals used ULSD. For the 2004 inventory, all five terminals used the same type of fuel as they did in 2002.

During the process of developing the 2004 update, it was determined that the fuel sulfur content for one terminal (CTN030) for 2002 was based on non-road diesel, when it should have been based on highway diesel, which contains less sulfur. The 2002 emissions estimates have been revised accordingly.

SECTION 3 DATA ACQUISITION

Data was collected through queries to the terminal operators requesting updates of the original inventories. The same terminal operators as participated in 2002 were queried, with the exception of one terminal that was not included as explained in Section 1. After the initial data gathering effort, the data was compiled and the equipment inventories were determined to be complete. No data gaps were identified. Each of the terminals retained the container terminal number or 'CTN' they were identified by for the 2002 inventory.

As in 2002, container terminal operators estimated average activity level as opposed to having unique engine hour data. Thus, in many cases, various types of equipment were noted to have the same operating hours.

Equipment lists were derived from information maintained by the container terminal operators. The data was then transcribed into a Microsoft® Excel spreadsheet. Data custody was maintained by a single point of contact.

To prepare for model input, several other activities were also undertaken. Initially, the container terminal equipment had to be stratified into equipment types recognized by the models or methods. For example, a "sweeper" was a single line item for the model, but container handlers described by various names were grouped together.

After organizing the data into "bins", each bin was averaged as to its model year, horsepower, and annual hours of use. Follow-up quality control was used to ensure that the summary "bins" reflected the master data tables collected during the first step of the process.

SECTION 4 METHODOLOGY

Emissions were computed using the draft NONROAD model version 1.2. Although a newer version of the model was available, the same version as used in 2002 was used for 2004 so that emissions estimates could be readily compared. Background on the draft NONROAD model (version 1.2) is provided in the original report.

4.1 NONROAD Overview

The draft NONROAD[4] model was used to estimate emissions from the data with the following inputs and assumptions:

- ***Model Inputs***: Default diesel sulfur content in parts per million (ppm) were used (3,400 ppm), with the exception of three terminals that used on-highway fuel (340 ppm) for all or part of the fleet. Ambient temperatures do not affect diesel exhaust emissions; therefore, they were estimated as ranging from approximately 40 to 85 degrees Fahrenheit.

- ***Emission Sources***: Twelve source categories are documented and discussed in Section 2.1. The source categories include (1) industrial diesel equipment, (2) construction diesel engines, and (3) commercial equipment (see Table 4.1 for source category designations).

- ***Temporal Scope***: The 2004 calendar year data was used. Since data was collected in December 2004, some December operating hours were estimated.

4.2 NONROAD Emission Sources

As in 2002, the fifteen survey categories were grouped into twelve NONROAD categories of equipment for the five container terminals. Table 4.1 presents survey categories by USEPA SCC, source category, and NONROAD category common name. It was endeavored to replicate the 2002 categorizations for purposes of the 2004 inventory as much as possible. Table 4.2 compares the 2004 and 2002 NONROAD category populations.

[4] See *http://www.epa.gov/otaq/nonrdmdl.htm*.

Table 4.1: NONROAD Diesel Engine Source Categories

Survey Category	SCC	Source Category*	NONROAD Category (common name)
Portable light set	2270002027	CDE	Signal board / light plant
Wharf crane	2270002045	CDE	Crane
Non-road vehicle	2270002051	CDE	Off-road truck
Bucket loader	2270002060	CDE	Rubber tired loader
Payloader	2270002072	CDE	Skid-steer loader
Aerial platform	2270003010	IDE	Aerial lift
Fork lift	2270003020	IDE	Forklift
Sweeper	2270003030	IDE	Sweeper / scrubber
Chassis rotator Container top loader Empty container handler	2270003040	IDE	Other industrial equipment
Rubber tired gantry crane Straddle carrier	2270003050	IDE	Other material handling equipment
Terminal tractor	2270003070	IDE	Terminal tractor
Generator	2270006005	Commercial	Light commercial generator set

*IDE-industrial diesel equipment; CDE-construction diesel equipment

Table 4.2: NONROAD Master Population Equipment List

Equipment Type	2004 Count	2002 Count
Terminal tractor	433	371
Other material handling equipment	213	143
Other industrial equipment	149	136
Fork lift	95	92
Non-road vehicle	25	20
Portable light set	16	18
Wharf crane	14	16
Aerial lift	8	5
Payloader (skid steer-loader)	5	5
Rubber tired loader	4	3
Sweeper	1	3
Commercial generator	1	1
Totals	964	813

The NONROAD model used only 964 of the 966 input entries. The reason for this discrepancy is not apparent, although it is speculated that two entries (one aerial platform and one non-road vehicle) did not fit the model value requirements in some aspect. The two pieces of equipment are not expected to make a material difference in the emissions estimates, and represent only 0.2% of the equipment inventoried.

SECTION 5 EMISSION ESTIMATES AND COMPARISONS

This section presents and compares the emissions estimates for the 2002 and 2004 emissions inventories (Section 5.1) and presents activity ratios based on emissions and container moves (Section 5.2).

5.1 Emission Estimates

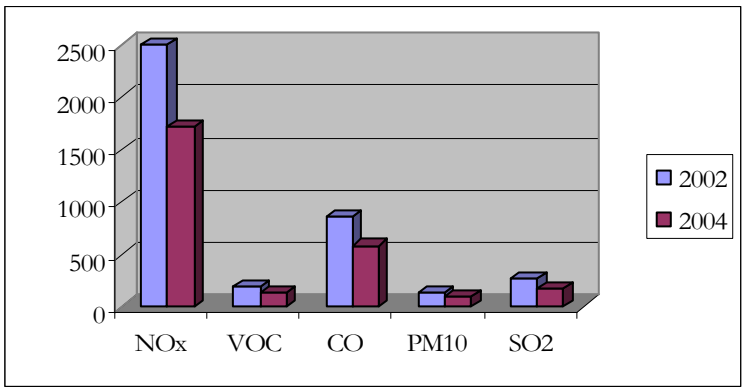
A comparison of 2002 and 2004 emissions estimates are presented in Table 5.1 and Figure 5.1. The five terminals showed overall reductions in pollutant emissions from 2002 to 2004 as follows:

- NOx – 31% reduction
- VOC – 32% reduction
- CO – 32% reduction
- PM_{10} – 32% reduction
- SO_2 – 35% reduction

Table 5.1: 2002 and 2004 Emissions Comparison, by Terminal and Pollutant, tpy

	NOx			VOC			CO			PM_{10}			SO_2		
Terminal	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**
CTN010	199	184	7.6%	14	13	6.4%	67	61	9.4%	11	10	8.9%	45	33	26.5%
CTN020	448	325	27.5%	32	23	26.3%	161	91	43.6%	26	20	23.2%	112	67	39.9%
CTN030	277	177	36.0%	20	14	32.2%	81	66	18.8%	14	9	40.3%	5	4	21.7%
CTN040	1,461	967	33.8%	122	75	38.2%	516	354	31.5%	81	52	35.2%	106	70	33.8%
CTN050	115	61	46.9%	8	8	0.0%	37	17	53.9%	7	3	53.7%	3	1	66.7%
Total	2,499	1,713	31.4%	196	134	31.8%	863	588	31.8%	139	94	32.3%	270	175	35.3%

Figure 5.1: 2002 and 2004 Emissions Comparison, Total by Pollutant, tpy

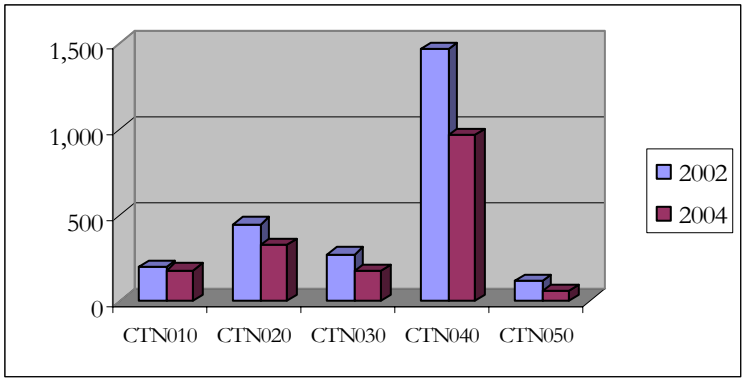


The 2002 emission estimates vary from those presented in the 2002 report because CTN060 has been removed. $PM_{2.5}$ was not included in order to retain readability of the data in the table; in the 2002 inventory, it was calculated as 92 percent of PM_{10}. The horsepower for 85 straddle carriers for CTN040 was under reported (184 hp instead of 368 hp per unit) in 2002; this has been corrected in these emissions estimates. During the process of developing the 2004 update, it was determined that the fuel sulfur content for CTN030 for 2002 was based on non-road diesel, when it should have been based on highway diesel, which contains less sulfur. For SO_2, the fuel sulfur was reduced to 340 ppm, approximately a 94 percent reduction. Since some fuel sulfur turns into sulfate, a particulate

matter component, the PM_{10} values for this terminal were reduced by ten percent, based on an analysis of the NONROAD model and its documentation. The 2002 emissions estimates for SO_2 and PM_{10} for CTN030 have been revised accordingly.

Of the pollutants modeled, NOx has the highest emissions. A comparison of 2002 and 2004 NOx emissions by terminal is presented in Figure 5.2.

Figure 5.2: 2002 and 2004 NOx Emissions Comparison by Terminal, tpy



Although the number of pieces of equipment in the total fleet increased by 153, the average age decreased by two years – from model year 1997 in 2002 to model year 1999 in 2004. The average horsepower for the fleet remained relatively constant at 243 hp in 2002 and 245 hp in 2004, and the average annual operating hours increased from 2,415 hrs to 2,533 hrs per year.

Several reasons account for the reduction in emissions observed from 2002 to 2004. First, despite the overall increase in equipment count, the fleet has been modernized considerably. EPA describes engines by tiers; Tier 2 engines are typically model years 2002 to 2004; Tier 1 engines, 1996 to 2001; and the base engine years are 1995 and earlier. These tiers are assigned emissions factors (in grams per horsepower-hour, g/hp-hr) in NONROAD, as shown in Table 5.2.

Table 5.2: NONROAD Emission Factors, g/hp-hr

Tier	NOx	PM_{10}
Tier 2	4.90	0.15
Tier 1	6.90	0.25
Base	10.90	0.49

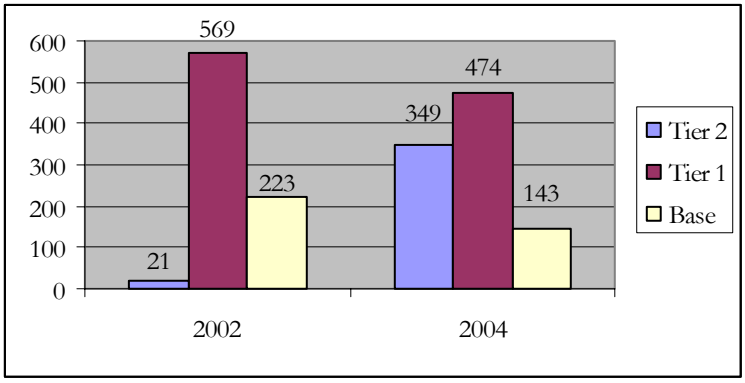
Note: BASE emissions estmated

As Table 5.3 and Figure 5.3 illustrate, the number of Tier 2 engines increased significantly in 2004 as compared to 2002, while the Tier 1 and Base engines decreased significantly. The emission factors for Tier 2 engines are much lower, thus accounting for the decrease in overall emissions.

Table 5.3: Engine Tier Distribution

Tier	2002		2004	
Tier 2	21	3%	349	36%
Tier 1	569	70%	474	49%
Base	223	27%	143	15%
	813		966	

Figure 5.3: Engine Tier Distribution



Secondly, the wharf cranes' power demand decreased substantially. In 2002, 16 wharf cranes represented 83,050,053 hp-hrs; in 2004, 14 wharf cranes represented only 68,239,300 hp-hrs. Horsepower-hour is the result of multiplying the horsepower for each piece of equipment by the annual operating hours, and summing for the fleet category.

Further analysis was conducted to compare the effect of lower wharf crane activity with the effect of fleet modernization. In 2002, wharf cranes contributed 342 tons of NOx; in 2004 inventory they contributed 271 tons, yielding a reduction of 71 tons (a 21 percent decrease). This reduction can be compared to the total fleet-wide reductions over the same period, which equated to 786 tons. The 71 tons of wharf crane reductions contributed nine percent of the total 786 tons of reductions. While this is significant, it becomes evident that slightly over 90 percent of the reductions were attributed to the new, cleaner engines.

Finally, the NONROAD model has evolved over the last two years, and although there was an attempt to use the same model platform and procedures, slight modifications in the Fortran programming and post-processing code could account for some minor variations in emissions results.

5.2 Activity Ratios

Another method for presenting emissions data is to compare it to a unit of activity; for container terminals, the activity is moving containers. In 2002, the container terminals made an average of 470,000 container moves per year, ranging from 144,000 to 1,000,000 per terminal. In 2004, the container terminals made an average of 586,182 container moves per year, ranging from 176,500 to 1,500,000 per terminal. Based on the total number of container moves in a year, as determined from data provided by the terminal operators, and the emission estimates obtained from the modeling as

described above, the emissions can be normalized to account for increased (or decreased) activity levels. These activity ratios are shown in Table 5.4 for 2002 and in Table 5.5 for 2004.

Table 5.4: 2002 Activity Ratios, per 1,000-container moves

Terminal	NOx	VOC	CO	PM_{10}	SO_2
CTN010	0.57	0.04	0.19	0.03	0.13
CTN020	0.76	0.05	0.27	0.04	0.19
CTN030	1.03	0.07	0.30	0.05	0.02
CTN040	1.46	0.12	0.52	0.08	0.11
CTN050	0.80	0.06	0.26	0.05	0.02
Average	1.06	0.08	0.37	0.06	0.12

Table 5.5: 2004 Activity Ratios, per 1,000-container moves

Terminal	NOx	VOC	CO	PM_{10}	SO_2
CTN010	0.71	0.05	0.23	0.04	0.13
CTN020	0.52	0.04	0.15	0.03	0.11
CTN030	0.48	0.04	0.18	0.02	0.01
CTN040	0.64	0.05	0.24	0.03	0.05
CTN050	0.35	0.05	0.10	0.02	0.01
Average	0.58	0.05	0.20	0.03	0.06

All of the terminals, except one (CTN010) increased container moves and decreased their ratio of emissions to container moves. For the five terminals overall, NOx, VOC, CO, PM_{10} and SO_2 per 1,000-container moves were reduced by 45 to 48 percent, per 1,000-container moves. Table 5.6 compares the activity ratios by pollutant for each terminal for 2002 and 2004.

Table 5.6: 2002 and 2004 Activity Ratio Comparison, per 1,000-container moves

	NOx			VOC			CO			PM_{10}			SO_2		
Terminal	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**	**2002**	**2004**	**%Red**
CTN010	0.57	0.71	-24.4%	0.04	0.05	-26.0%	0.19	0.23	-22.0%	0.03	0.04	-22.9%	0.13	0.13	1.1%
CTN020	0.76	0.52	32.1%	0.05	0.04	31.0%	0.27	0.15	47.3%	0.04	0.03	28.2%	0.19	0.11	43.8%
CTN030	1.03	0.48	53.1%	0.07	0.04	50.3%	0.30	0.18	40.5%	0.05	0.02	56.2%	0.02	0.01	42.6%
CTN040	1.46	0.64	55.9%	0.12	0.05	58.8%	0.52	0.24	54.3%	0.08	0.03	56.8%	0.11	0.05	55.8%
CTN050	0.80	0.35	56.7%	0.06	0.05	18.4%	0.26	0.10	62.4%	0.05	0.02	62.5%	0.02	0.01	73.1%
Average	1.06	0.58	45.0%	0.08	0.05	45.3%	0.37	0.20	45.3%	0.06	0.03	45.7%	0.12	0.06	48.1%

The activity ratio is calculated by dividing the emissions in tons per year by the annual container moves, and then multiplying by 1,000. For example, 2004 total NOx emissions were 1,713 tons per year, and total container moves were 2,930,911. The following equation yields the activity ratio:

1,713 tons NOx per year/2,930,911 container moves x 1,000 = 0.58 tons NOx per 1,000-container moves

Care should be taken in applying these activity ratios to other operations, as they vary considerably by terminal. There are a number of variables that could account for this: number of pieces of equipment, age of equipment, operating hours, fuel type, and number of container moves in the year.

APPENDIX A EQUIPMENT INVENTORY DETAILS

Port of New York and New Jersey
Container Terminal Diesel-Powered Cargo Handling Equipment Inventory Greater Than 25 Horsepower
2004

DATA DETAILS

Equipment Type	Make	Year	HP	Annual Operating Hours
		AERIAL PLATFORMS		
AERIAL PLATFORM	SIMON	1989	125	1,000
AERIAL PLATFORM	SCISSOR LIFT	1998	42	2,000
AERIAL PLATFORM	GENIE	1998	150	1,000
AERIAL PLATFORM	JLG	1999	42	2,000
AERIAL PLATFORM	JLG	2000	42	2,000
AERIAL PLATFORM	JLG	2002	42	2,000
AERIAL PLATFORM	JLG	2002	42	2,000
AERIAL PLATFORM	GENIE	2003	180	1,000
AERIAL PLATFORM	JLG	2004	42	2,000
		BUCKET LOADERS		
BUCKET LOADER	CAT	1986	125	700
BUCKET LOADER	FURAKOWA	1987	135	100
BUCKET LOADER	CATERPILLAR	1997	140	100
BUCKET LOADER	CATERPILLAR	1997	140	100
		CHASSIS ROTATORS		
CHASSIS ROTATOR	TAYLOR	1996	152	2,500
CHASSIS ROTATOR	TAYLOR	1998	152	2,500
CHASSIS ROTATOR	TAYLOR	2001	160	2,500
CHASSIS ROTATOR	TAYLOR	2001	160	2,500
CHASSIS ROTATOR	TAYLOR	2003	155	2,000
		EMPTY CONTAINER HANDLERS		
EMPTY CONTAINER HANDLER	FANTUZZI	1989	160	600
EMPTY CONTAINER HANDLER	TAYLOR	1996	210	2,548
EMPTY CONTAINER HANDLER	TAYLOR	1998	180	2,340
EMPTY CONTAINER HANDLER	TAYLOR	1998	180	2,340
EMPTY CONTAINER HANDLER	TAYLOR	2000	152	600
EMPTY CONTAINER HANDLER	FANTUZZI	2000	160	600
EMPTY CONTAINER HANDLER	FANTUZZI	2000	160	600
EMPTY CONTAINER HANDLER	FANTUZZI	2000	180	2,340
EMPTY CONTAINER HANDLER	FANTUZZI	2000	180	2,340
EMPTY CONTAINER HANDLER	FANTUZZI	2000	180	2,340
EMPTY CONTAINER HANDLER	FANTUZZI	2000	180	2,340
EMPTY CONTAINER HANDLER	TAYLOR	2000	180	2,340
EMPTY CONTAINER HANDLER	FANTUZZI	2001	160	600
EMPTY CONTAINER HANDLER	FANTUZZI	2001	160	600
EMPTY CONTAINER HANDLER	KALMAR	2001	210	2,548
EMPTY CONTAINER HANDLER	KALMAR	2001	210	2,548
EMPTY CONTAINER HANDLER	KALMAR	2001	210	2,548
EMPTY CONTAINER HANDLER	KALMAR	2003	225	2,548
EMPTY CONTAINER HANDLER	KALMAR	2003	225	2,548
EMPTY CONTAINER HANDLER	KALMAR	2003	225	2,548
EMPTY CONTAINER HANDLER	KALMAR	2003	225	2,548
EMPTY CONTAINER HANDLER	TAYLOR	2004	152	600
		FORKLIFTS		
FORK LIFT	TAYLOR	1970	160	900
FORK LIFT	CLARK	1984	250	2,500
FORK LIFT	CATERPILLAR	1986	40	150
FORK LIFT	CATERPILLAR	1986	40	150
FORK LIFT	CATERPILLAR	1986	40	150
FORK LIFT	CATERPILLAR	1986	75	1,000
FORK LIFT	CATERPILLAR	1986	75	1,000
FORK LIFT	CATERPILLAR	1987	80	2,000
FORK LIFT	CATERPILLAR	1987	80	2,000
FORK LIFT	CLARK	1989	200	900
FORK LIFT	CLARK	1989	200	900
FORK LIFT	CLARK	1990	200	900
FORK LIFT	CLARK	1992	200	900
FORK LIFT	CATERPILLAR	1993	175	1,200
FORK LIFT	CATERPILLAR	1993	175	1,200

Equipment Type	Make	Year	HP	Annual Operating Hours
FORK LIFT	KALMAR	1994	200	300
FORK LIFT	CLARK	1994	210	1,800
FORK LIFT	YALE	1995	49	2,000
FORK LIFT	YALE	1995	49	2,000
FORK LIFT	YALE	1995	49	2,000
FORK LIFT	YALE	1995	56	2,000
FORK LIFT	YALE	1995	56	2,000
FORK LIFT	YALE	1995	56	2,000
FORK LIFT	YALE	1995	85	2,000
FORK LIFT	YALE	1995	85	2,000
FORK LIFT	YALE	1995	85	2,000
FORK LIFT	CLARK	1995	200	900
FORK LIFT	CLARK	1995	200	900
FORK LIFT	CLARK	1995	200	900
FORK LIFT	CLARK	1995	200	900
FORK LIFT	CATERPILLAR	1998	55	400
FORK LIFT	CATERPILLAR	1998	55	400
FORK LIFT	CATERPILLAR	1998	55	400
FORK LIFT	CATERPILLAR	1998	55	400
FORK LIFT	CATERPILLAR	1998	55	400
FORK LIFT	CATERPILLAR	1998	55	400
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	56	2,000
FORK LIFT	YALE	1998	85	2,000
FORK LIFT	YALE	1998	85	2,000
FORK LIFT	YALE	1998	85	2,000
FORK LIFT	YALE	1998	85	2,000
FORK LIFT	TAYLOR	1998	200	900
FORK LIFT	HYSTER	1998	200	4,700
FORK LIFT	HYSTER	1998	210	1,560
FORK LIFT	HYSTER	1998	210	1,560
FORK LIFT	TAYLOR	1998	210	1,560
FORK LIFT	KALMAR	1998	226	300
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	56	2,000
FORK LIFT	YALE	2000	85	2,000
FORK LIFT	YALE	2000	85	2,000
FORK LIFT	YALE	2000	85	2,000
FORK LIFT	YALE	2000	85	2,000
FORK LIFT	TAYLOR	2000	160	900
FORK LIFT	TAYLOR	2000	160	900
FORK LIFT	KALMAR	2002	176	1,100
FORK LIFT	KALMAR	2002	176	1,100
FORK LIFT	KALMAR	2002	210	3,100
FORK LIFT	KALMAR	2002	210	4,700
FORK LIFT	KALMAR	2002	210	4,700
FORK LIFT	KALMAR	2002	210	4,700
FORK LIFT	KALMAR	2002	210	4,700
FORK LIFT	KALMAR	2002	210	4,700
FORK LIFT	YALE	2003	56	2,000
FORK LIFT	YALE	2003	56	2,000

Equipment Type	Make	Year	HP	Annual Operating Hours
FORK LIFT	YALE	2003	56	2,000
FORK LIFT	YALE	2003	56	2,000
FORK LIFT	YALE	2003	56	2,000
FORK LIFT	TAYLOR	2004	160	900
FORK LIFT	TAYLOR	2004	160	900
FORK LIFT	TAYLOR	2004	160	900
FORK LIFT	KALMAR	2004	200	1,200
FORK LIFT	KALMAR	2004	200	1,200
FORK LIFT	KALMAR	2004	200	1,200
FORK LIFT	KALMAR	2004	200	1,200
FORK LIFT	KALMAR	2004	200	1,200
FORK LIFT	KALMAR	2004	200	1,200
FORK LIFT	KALMAR	2004	200	1,200
GENERATOR				
GENERATOR	CATERPILLAR	2003	610	500
NON-ROAD VEHICLES				
NON-ROAD VEHICLE	INTERNATIONAL	1979	210	2,000
NON-ROAD VEHICLE	INTERNATIONAL	1990	170	2,000
NON-ROAD VEHICLE	INTERNATIONAL	1990	170	2,000
NON-ROAD VEHICLE	FORD	1993	180	1,800
NON-ROAD VEHICLE	CHEVY	1994	210	1,800
NON-ROAD VEHICLE	AM/PM	2000	40	800
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2000	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2001	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2001	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2001	160	2,000
NON-ROAD VEHICLE	CHEVROLET	2001	160	2,000
NON-ROAD VEHICLE	FORD	2001	210	1,800
NON-ROAD VEHICLE	FREIGHTLINER	2002	240	2,000
NON-ROAD VEHICLE	CHEVROLET	2003	160	2,000
NON-ROAD VEHICLE	CHEVY	2003	160	2,000
NON-ROAD VEHICLE	CHEVY	2003	160	2,000
NON-ROAD VEHICLE	CHEVY	2003	160	2,000
NON-ROAD VEHICLE	CHEVY	2003	160	2,000
NON-ROAD VEHICLE	CHEVY	2003	160	2,000
PAYLOADERS				
PAYLOADER	NEW HOLLAND	2003	38	1,000
PAYLOADER	NEW HOLLAND	2003	38	1,000
PAYLOADER	NEW HOLLAND	2003	38	1,000
PAYLOADER	NEW HOLLAND	2004	38	1,000
PAYLOADER	NEW HOLLAND	2004	38	1,000
PORTABLE LIGHT SETS				
PORTABLE LIGHT SETS	AMIDA	1998	30	200
PORTABLE LIGHT SETS	AMIDA	1998	30	200
PORTABLE LIGHT SETS	COLEMAN	1999	50	1,200
PORTABLE LIGHT SETS	COLEMAN	1999	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
PORTABLE LIGHT SETS	BOSS	2001	50	1,200
RUBBER TIRED GANTRY CRANES				

Equipment Type	Make	Year	HP	Annual Operating Hours
RUBBER TIRED GANTRY CRANE	PACECO	1992	450	4,680
RUBBER TIRED GANTRY CRANE	PACECO	1992	450	4,680
RUBBER TIRED GANTRY CRANE	ZPMC	1998	450	4,680
RUBBER TIRED GANTRY CRANE	ZPMC	1998	450	4,680
RUBBER TIRED GANTRY CRANE	ZPMC	1998	450	4,680
RUBBER TIRED GANTRY CRANE	ZPMC	1998	450	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2001	450	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2001	450	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2001	450	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2001	450	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
RUBBER TIRED GANTRY CRANE	KONECRANE	2003	475	4,680
STRADDLE CARRIERS				
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1996	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1997	368	3,500
STRADDLE CARRIER	SISU	1998	368	3,500
STRADDLE CARRIER	SISU	1998	368	3,500
STRADDLE CARRIER	SISU	1998	368	3,500
STRADDLE CARRIER	SISU	1998	368	3,500
STRADDLE CARRIER	SISU	1998	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	SISU	1999	368	3,500
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400

Equipment Type	Make	Year	HP	Annual Operating Hours
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	NOELL	2000	320	2,400
STRADDLE CARRIER	SISU	2000	368	3,500
STRADDLE CARRIER	SISU	2000	368	3,500
STRADDLE CARRIER	SISU	2000	368	3,500
STRADDLE CARRIER	SISU	2000	368	3,500
STRADDLE CARRIER	SISU	2000	368	3,500
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	NOELL	2001	320	2,400
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500

Equipment Type	Make	Year	HP	Annual Operating Hours
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	SISU	2001	368	3,500
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	NOELL	2002	320	2,400
STRADDLE CARRIER	SISU	2002	368	3,500
STRADDLE CARRIER	SISU	2002	368	3,500
STRADDLE CARRIER	SISU	2002	368	3,500
STRADDLE CARRIER	SISU	2002	368	3,500
STRADDLE CARRIER	SISU	2002	368	3,500
STRADDLE CARRIER	KALMAR	2002	432	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	368	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2003	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500

Equipment Type	Make	Year	HP	Annual Operating Hours
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
STRADDLE CARRIER	KALMAR	2004	370	3,500
SWEEPER				
SWEEPER	TENNANT	1996	140	1,000
TERMINAL TRACTORS				
TERMINAL TRACTOR	KALMAR	1985	215	1,000
TERMINAL TRACTOR	SISU	1986	215	2,500
TERMINAL TRACTOR	OTTAWA	1987	210	1,000
TERMINAL TRACTOR	OTTAWA	1987	210	1,000
TERMINAL TRACTOR	OTTAWA	1987	210	2,500
TERMINAL TRACTOR	SISU	1987	215	2,500
TERMINAL TRACTOR	OTTAWA	1994	174	3,600
TERMINAL TRACTOR	OTTAWA	1994	174	3,600
TERMINAL TRACTOR	OTTAWA	1994	174	3,600
TERMINAL TRACTOR	OTTAWA	1994	174	3,600
TERMINAL TRACTOR	OTTAWA	1994	210	500
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	170	2,340
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	3,600

Equipment Type	Make	Year	HP	Annual Operating Hours
TERMINAL TRACTOR	OTTAWA	1995	174	3,600
TERMINAL TRACTOR	OTTAWA	1995	174	700
TERMINAL TRACTOR	OTTAWA	1995	174	700
TERMINAL TRACTOR	OTTAWA	1995	210	2,340
TERMINAL TRACTOR	OTTAWA	1995	210	2,340
TERMINAL TRACTOR	OTTAWA	1995	210	2,340
TERMINAL TRACTOR	OTTAWA	1995	210	2,340
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	3,600
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	700
TERMINAL TRACTOR	OTTAWA	1997	174	1,800
TERMINAL TRACTOR	OTTAWA	1997	174	1,800
TERMINAL TRACTOR	OTTAWA	1997	174	1,800
TERMINAL TRACTOR	OTTAWA	1997	174	1,800
TERMINAL TRACTOR	OTTAWA	1997	174	1,800
TERMINAL TRACTOR	OTTAWA	1997	210	500
TERMINAL TRACTOR	OTTAWA	1997	210	1,500
TERMINAL TRACTOR	OTTAWA	1998	170	2,340
TERMINAL TRACTOR	OTTAWA	1998	170	2,340
TERMINAL TRACTOR	OTTAWA	1998	170	2,340
TERMINAL TRACTOR	OTTAWA	1998	170	2,340
TERMINAL TRACTOR	OTTAWA	1998	170	2,340
TERMINAL TRACTOR	OTTAWA	1998	170	2,340
TERMINAL TRACTOR	OTTAWA	1998	174	35
TERMINAL TRACTOR	OTTAWA	1998	174	1,500
TERMINAL TRACTOR	OTTAWA	1998	174	1,500
TERMINAL TRACTOR	OTTAWA	1998	174	1,500
TERMINAL TRACTOR	OTTAWA	1998	174	1,500
TERMINAL TRACTOR	OTTAWA	1998	174	1,500
TERMINAL TRACTOR	OTTAWA	1998	174	1,500
TERMINAL TRACTOR	OTTAWA	1998	215	2,500
TERMINAL TRACTOR	OTTAWA	1998	215	2,500
TERMINAL TRACTOR	OTTAWA	1998	215	2,500
TERMINAL TRACTOR	OTTAWA	1998	215	2,500
TERMINAL TRACTOR	TAYLOR	1998	215	2,000
TERMINAL TRACTOR	OTTAWA	1999	170	2,340
TERMINAL TRACTOR	OTTAWA	1999	170	2,340
TERMINAL TRACTOR	OTTAWA	1999	170	2,340
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600

Equipment Type	Make	Year	HP	Annual Operating Hours
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	3,600
TERMINAL TRACTOR	OTTAWA	1999	174	1,500
TERMINAL TRACTOR	OTTAWA	1999	174	1,500
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	174	700
TERMINAL TRACTOR	OTTAWA	1999	215	2,500
TERMINAL TRACTOR	OTTAWA	1999	215	2,500
TERMINAL TRACTOR	OTTAWA	1999	215	2,500
TERMINAL TRACTOR	OTTAWA	1999	215	2,500
TERMINAL TRACTOR	MOL	1999	425	500
TERMINAL TRACTOR	MOL	1999	425	500
TERMINAL TRACTOR	MOL	1999	425	500
TERMINAL TRACTOR	OTTAWA	2000	170	2,340
TERMINAL TRACTOR	OTTAWA	2000	170	2,340
TERMINAL TRACTOR	OTTAWA	2000	170	2,340
TERMINAL TRACTOR	OTTAWA	2000	170	2,340
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600

Equipment Type	Make	Year	HP	Annual Operating Hours
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	174	3,600
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	200	1,800
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	210	2,340
TERMINAL TRACTOR	OTTAWA	2000	215	2,500
TERMINAL TRACTOR	OTTAWA	2000	215	2,500
TERMINAL TRACTOR	OTTAWA	2000	215	2,500
TERMINAL TRACTOR	OTTAWA	2000	215	2,500
TERMINAL TRACTOR	OTTAWA	2001	170	2,340
TERMINAL TRACTOR	OTTAWA	2001	170	2,340
TERMINAL TRACTOR	OTTAWA	2001	170	2,340
TERMINAL TRACTOR	OTTAWA	2001	170	2,340
TERMINAL TRACTOR	OTTAWA	2001	170	2,340
TERMINAL TRACTOR	OTTAWA	2001	170	2,340
TERMINAL TRACTOR	OTTAWA	2002	174	1,500
TERMINAL TRACTOR	OTTAWA	2002	174	1,500
TERMINAL TRACTOR	OTTAWA	2002	174	1,500
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300

Equipment Type	Make	Year	HP	Annual Operating Hours
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300

Equipment Type	Make	Year	HP	Annual Operating Hours
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2002	225	2,300
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	173	3,600
TERMINAL TRACTOR	OTTAWA	2003	174	700
TERMINAL TRACTOR	OTTAWA	2003	174	700
TERMINAL TRACTOR	OTTAWA	2003	174	700
TERMINAL TRACTOR	OTTAWA	2003	174	700
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,600
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300

Equipment Type	Make	Year	HP	Annual Operating Hours
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2003	245	2,300
TERMINAL TRACTOR	OTTAWA	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	TICO	2004	200	1,800
TERMINAL TRACTOR	OTTAWA	2004	245	2,600
TERMINAL TRACTOR	OTTAWA	2004	245	2,600
TERMINAL TRACTOR	OTTAWA	2004	245	2,600
TERMINAL TRACTOR	OTTAWA	2004	245	2,600
TERMINAL TRACTOR	OTTAWA	2004	245	2,600
TERMINAL TRACTOR	OTTAWA	2004	245	2,600
TOP LOADERS				
TOP LOADER	HYSTER	1970	152	1,000
TOP LOADER	BELOLOTTI	1984	185	3,360
TOP LOADER	TAYLOR	1989	300	1,700
TOP LOADER	TAYLOR	1990	152	2,800
TOP LOADER	TAYLOR	1991	300	3,800
TOP LOADER	VALMET	1993	152	2,800
TOP LOADER	VALMET	1993	152	2,800
TOP LOADER	TAYLOR	1993	300	3,800
TOP LOADER	TAYLOR	1993	300	3,800
TOP LOADER	TAYLOR	1993	300	3,800
TOP LOADER	TAYLOR	1994	152	2,800
TOP LOADER	TAYLOR	1994	152	2,800
TOP LOADER	TAYLOR	1994	152	2,800
TOP LOADER	TAYLOR	1994	250	2,500
TOP LOADER	TAYLOR	1994	250	2,500
TOP LOADER	TAYLOR	1994	250	2,500
TOP LOADER	TAYLOR	1994	250	2,500
TOP LOADER	TAYLOR	1994	250	2,500
TOP LOADER	TAYLOR	1994	250	2,500

Equipment Type	Make	Year	HP	Annual Operating Hours
TOP LOADER	CATERPILLAR	1994	260	800
TOP LOADER	CATERPILLAR	1994	260	800
TOP LOADER	CATERPILLAR	1994	260	800
TOP LOADER	CATERPILLAR	1994	260	800
TOP LOADER	CATERPILLAR	1994	260	800
TOP LOADER	CATERPILLAR	1995	260	800
TOP LOADER	TAYLOR	1995	300	3,800
TOP LOADER	TAYLOR	1996	152	2,800
TOP LOADER	TAYLOR	1996	250	2,500
TOP LOADER	TAYLOR	1996	260	2,500
TOP LOADER	CATERPILLAR	1996	260	800
TOP LOADER	KALMAR	1996	270	3,600
TOP LOADER	KALMAR	1996	280	3,600
TOP LOADER	KALMAR	1996	290	3,600
TOP LOADER	CATERPILLAR	1997	260	800
TOP LOADER	KALDNES	1997	260	800
TOP LOADER	SISU	1998	215	2,800
TOP LOADER	SISU	1998	215	2,800
TOP LOADER	SISU	1998	215	2,800
TOP LOADER	SISU	1998	215	2,800
TOP LOADER	TAYLOR	1998	300	3,800
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	HYSTER	1999	152	2,500
TOP LOADER	TEREX	1999	200	3,360
TOP LOADER	SISU	1999	215	2,800
TOP LOADER	SISU	1999	215	2,800
TOP LOADER	SISU	1999	215	2,800
TOP LOADER	SISU	1999	215	2,800
TOP LOADER	TAYLOR	1999	300	2,500
TOP LOADER	TAYLOR	1999	330	2,500
TOP LOADER	SISU	1999	330	2,000
TOP LOADER	SISU	1999	330	2,000
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	TAYLOR	2000	200	2,800
TOP LOADER	FANTUZZI	2000	330	1,200
TOP LOADER	FANTUZZI	2000	330	1,200
TOP LOADER	FANTUZZI	2000	330	1,200
TOP LOADER	FANTUZZI	2000	330	1,200
TOP LOADER	FANTUZZI	2000	330	1,200
TOP LOADER	TAYLOR	2000	330	2,500
TOP LOADER	TAYLOR	2000	330	2,500
TOP LOADER	KALMAR	2000	330	2,000
TOP LOADER	KALMAR	2000	330	2,000
TOP LOADER	KALMAR	2001	200	2,500
TOP LOADER	KALMAR	2001	330	3,600
TOP LOADER	KALMAR	2001	330	3,600
TOP LOADER	KALMAR	2002	200	2,500
TOP LOADER	KALMAR	2002	210	3,800
TOP LOADER	KALMAR	2002	210	3,800
TOP LOADER	KALMAR	2002	225	3,800
TOP LOADER	KALMAR	2002	225	3,800
TOP LOADER	KALMAR	2002	225	3,800
TOP LOADER	TAYLOR	2003	225	3,800
TOP LOADER	TAYLOR	2003	225	3,800

Equipment Type	Make	Year	HP	Annual Operating Hours
TOP LOADER	TAYLOR	2003	240	2,800
TOP LOADER	TAYLOR	2003	240	2,800
TOP LOADER	TAYLOR	2003	240	2,800
TOP LOADER	TAYLOR	2003	240	2,800
TOP LOADER	TAYLOR	2003	240	2,800
TOP LOADER	TAYLOR	2003	240	2,800
TOP LOADER	KALMAR	2003	330	2,000
TOP LOADER	KALMAR	2003	330	2,000
TOP LOADER	KALMAR	2003	330	2,000
TOP LOADER	TAYLOR	2004	225	3,800
TOP LOADER	KALMAR	2004	225	3,800
TOP LOADER	KALMAR	2004	225	3,800
TOPLOADER	HYSTER	1995	285	1,560
TOPLOADER	HYSTER	1995	285	1,560
TOPLOADER	HYSTER	1995	285	1,560
TOPLOADER	HYSTER	1995	285	1,560
TOPLOADER	HYSTER	1995	285	1,560
TOPLOADER	HYSTER	1995	285	1,560
TOPLOADER	TAYLOR	1995	315	2,340
TOPLOADER	HYSTER	1996	285	1,560
TOPLOADER	TAYLOR	1996	315	2,340
TOPLOADER	FANTUZZI	1997	315	2,340
TOPLOADER	TAYLOR	1998	315	2,340
TOPLOADER	TAYLOR	1998	315	2,340
TOPLOADER	FANTUZZI	2000	315	2,340
TOPLOADER	FANTUZZI	2000	315	2,340
TOPLOADER	TAYLOR	2000	315	2,600
TOPLOADER	TAYLOR	2000	315	2,600
TOPLOADER	TAYLOR	2000	315	2,600
TOPLOADER	FANTUZZI	2000	315	2,600
TOPLOADER	TAYLOR	2001	315	2,600
TOPLOADER	FANTUZZI	2003	330	3,120
TOPLOADER	FANTUZZI	2003	330	3,120
TOPLOADER	FANTUZZI	2003	330	3,120
TOPLOADER	HYSTER	2004	330	3,120
TOPLOADER	HYSTER	2004	330	3,120
		WHARF CRANES		
WHARF CRANE	TAYLOR	1968	500	700
WHARF CRANE	PACECO	1978	850	2,160
WHARF CRANE	PACECO	1980	850	1,438
WHARF CRANE	PACECO	1981	950	500
WHARF CRANE	PACECO	1984	900	500
WHARF CRANE	PACECO	1988	1750	5,800
WHARF CRANE	PACECO	1988	1750	5,800
WHARF CRANE	PACECO	1988	1750	5,800
WHARF CRANE	PACECO	1988	1750	5,800
WHARF CRANE	PACECO	1988	1750	5,800
WHARF CRANE	PACECO	1990	1750	4,800
WHARF CRANE	LIEBHERR	1998	835	1,800
WHARF CRANE	LIEBHERR	1998	835	1,800
WHARF CRANE	PACECO	2000	1750	1,000