Canadian Trains Set

for

Transport Tycoon Deluxe

TTDPatch 2.6 and OpenTTD v0.6

User Guide

v0.3

April 2008

Canadian Trains Set

The Canadian Trains Set is a comprehensive train replacement set for Transport Tycoon Deluxe, it features a large number of Canadian trains, locomotives, passenger coaches and freight cars from the early 1900's to present day, covering steam, diesel and electric, many more compared to v0.2. Also, the set covers the many rail companies that have been operating in Canada; to name a few, Canadian National (CNR), VIA Rail (VIA), Canadian Pacific (CPR), Ontario Northland (ONR), British Columbia (BCR), GO-Transit (GTR) and West Coast Express (WCE). Apart from standard gauge rolling stock, it contains a complete set of narrow gauge engines and wagons, representing White Pass and Yukon (WPY) as well as Newfoundland (NFR) Railways. Included, too, the Narrow Gauge Track System by Cornelius and new train depots by lifeblood.

It is one of the sets in the Canadian/American suite of graphic sets.

It complements the Canadian Stations Set, the North American Cities, Roads and Bridges Sets [the last one not yet released], although they are not required. Also, add the Canadian Town Names Set, it will give a touch of reality to your games.

Compatible Platforms :

The set is compatible with TTDPatch 2.6 alpha [r1758+] and OpenTTD v0.6.0 and nightlies [12283+]. It is not supported by TTDPatch 2.5 beta series, any earlier versions of TTDPatch and OpenTTD. It is available for Windows (CanSetw.grf) and DOS (CanSetd.grf) environments.

Climate Support :

The set is designed for the temperate and arctic climates only.

Looking for the set ...

Listed on GRF Crawler

http://grfcrawler.tt-forums.net/

New Features of Canadian Trains Set

- **New Liveries** : there are many new liveries included in v0.3, new engines, trains, passenger coaches and freight wagons. In fact they have doubled in numbers, since v0.2 was released in late 2005.

- **Push-Pull Trains** : this version sees the introduction of fully functional push-pull trains. We have 5 engines, **GMD GP40TC**, **GP40-2W**, **F59PH**, **FP7** and the **CNR X10a** tank engine that are push-pull capable and together with the **cab control cars**, single and bi-level, as well as the **ACPU/APU HEP** unit allow you to construct many combinations of push-pull trains, in a multitude of liveries. Further, the **Werkspoor RAm TEE**, the **ONR 'Northlander' TEE** headed by a FP7 engine and the **BBD MR-90 EMU-2** are also push-pull capable without requiring a cab control car. For more details see 'Push-Pull Trains' later on in this guide.

- **'New' Cargo Support** : that has been added, too. v0.3 has now the ability to transport almost all cargo types, from TTD 'original' default arctic and temperate cargo types, including tropical copper ore, to 3rd party Industry/Cargo sets, like ECS by George. Incidentally, all ECS cargo types are supported; i.e. all cargo types listed in wiki specifications as of January 11, 2008, except sub-tropical only ones, sulphur and uranium variants. In all there are 41 cargo types supported, no Cargo Classes have been used, except passengers, mail, armoured and express; these cater for passengers, tourists, mail, luggage, valuables, gold, diamonds and goods. For more details see ''New' Cargo Support' later on in this guide.

- **AI Support** : For those of you, who enjoy a game with the AI; let me assure you, that the AI has our full support. Without the AI purchase support feature nothing would run in that department.

- **AutoUpgrade (aka AutoReplace)** : this feature has been piggy-backed onto AI support and fully re-written, making full use of the AutoReplace vehicle selection feature of TTDPatch. It will take the hassle out of upgrading your trains to better models. For more details see 'Automatic Vehicle Upgrade (AutoReplace)' later on in this guide.

- **Speed Limiter Facility [SLF]** : most of you know when it comes to speed limiting trains, things aren't that rosy when livery overrides are involved. This problem has been solved with SLF. Further, it [sort of] forces players to use vans [cabeese] on freight trains. Basically, every train is speed limited to the slowest vehicle in a train. Some vehicle have no speed limits; they are : lightweight and bi-level coaches, lightweight mail cars, the express car, as well as vans and the Steam Generator Unit (SGU). In this case trains travel up to the maximum speed of the (lead) engine, traffic, track and environment permitting. For freight trains, speed limits are strictly enforced; i.e. they travel at the speed of the slowest vehicle in a train; this could be the engine or a wagon. Further, without a van in the train, freight trains are penalised with a 20% speed reduction (until 1985). So it really makes the van a very useful wagon, although it is not able to carry any cargo. After 1986 and beyond, the introduction of the End-Train-Device (ETD) makes vans obsolete and that speed penalty no longer applies. 1986 and beyond, freight trains will have an ETD fitted automatically to the last freight car, for your convenience.

- Finally, the **CNR X10a tank engine**, a rather unique and extraordinary steam engine. It is push-pull capable, travels at a reduced speed of 20 mph (32 km/h) during shunting and whenever the cab control car is leading. Do not let this train travel cab control car leading on main lines. The X10a tank engine has been modified to allow operation in the most difficult of terrains and situations. Just recently a couple of them started service on the tourist railway to the top of Rocky Summit, which is a mirror image of the Mt Washington Cog Railway (175 miles south west of Montreal, in New Hampshire [USA]).

Compatibility Issues

This set is not compatible with any other train vehicle sets. You should not have any other train vehicle sets activated while this set is in use, including the US Set.

In case you would like to use CanSet v0.3 in saved games, where v0.2 was in use, you will most probably encounter problems. There are significant differences between the two versions. Therefore CanSet v0.3 received a new GRFID. It is highly recommended, that you start a new game.

Further CanSet v0.3 is only supported by TTDPatch 2.6 alpha [r1758+ required, although r1825+ is recommended] and OpenTTD v0.6.0 and nightlies [12283+]. It is not compatible with TTDPatch 2.5 beta series, earlier versions of TTDPatch and OpenTTD.

Installation and Configuration

Add CanSet[w/d].grf to the \NEWGRF directory and add the entry 'newgrf\CanSet[w/d].grf [snowline] [new industry/cargo]' to the newgrf.cfg file, found in the game directory.

Note : For parameter settings of [snowline] and [new industry/cargo] see following pages.

You will require the following patch settings in ttdpatch.cfg :

- **newtrains on**
- **electrifiedrailway on**
- **multihead 0**
- **trainrefit on**

The following patch flags are highly recommended and should be set as follows :

- **wagonspeedlimits on**, to operate trains with more appropriate speeds.
- **tracktypecostdiff on**, to have a distinct cost structure for normal, electrified and narrow gauge track systems.
- **newcargos on**, to have additional built in cargo types available.
- **newindustries on**, to have additional built in industries available.
- **tempsnowline on**, to have built in snow line height feature available.
- **startyear 1921**, recommended to use early model rolling stock.

The following patch flags are required or recommended, in order to have automatic renewal/replacement of locomotives (for a more detailed description, see later in this guide) :

- **autorenew [-mm]**, mm=number of months before end of locomotive life
- **autoreplace on**
- **enginespersist off**
- **forceautorenew off**
- **gotodepot on**
- **servint [ddd]**, ddd=number of days between servicing

Snowline Option

The Canadian Trains Set has built in the ability to change the snowline in either the arctic or temperate climate to what ever level desired. No other graphics file is required. The 'snowline' feature is deactivated by default. The following parameter settings are available :

0 – [default] no snow in temperate or level 7 in arctic. Use this setting to disable the snowline feature or if you wish to use a static or variable snowline feature from another set; e.g. Canadian Stations Set, NA Roads, NA City or even a 3rd party set.

1 .. 15 - set static snow line height to level 1 to 15.

129 .. 132 - seasonally changing snow line (4 scenarios) :
129 - up to level 14 in summer, down to level 3 in winter (deep winter, hot summer)
130 - up to level 14 in summer, down to level 7 in winter (mild winter, hot summer)
131 - up to level 10 in summer, down to level 3 in winter (sub-arctic winter)
132 - up to level 7 in summer, down to level 3 in winter (arctic winter)

Do not enable the Snowline feature multiple times; i.e. in more than one activated graphics set.

Note: if you wish to use other parameters (described elsewhere), you will need to either specify this parameter as desired or use '0' the default as place holder. You will also require the ttdpatch.cfg setting : 'tempsnowline on'.

New Industry/Cargo Option

This option allows you to have the CanSet support 3rd party industry and cargo sets.

If ECS by George (any vector) is detected. then CanSet will automatically support them. In this case you do not have to set this parameter, in fact, if set it will be ignored.

Further the Canadian Trains Set has built in the ability to have the arctic cargo types of paper and food as well as the arctic industries of paper mill, printing works and food processing plant available in the temperate climate. Food is accepted by almost all buildings with the North American Cities Set activated; otherwise the following town buildings accept food : hotel, stadiums, shopping centre and some shops.

The temperate cargo types of iron ore and steel as well as the temperate industries of iron ore mine, ore processing plant (replacing the steel mill) and a new metal fabrication plant (sub tropical factory) are available in the arctic climate.

Also, the sub-tropical cargo type of copper ore and copper, the metal, is available in both the arctic and temperate climate. Copper ore is processed at the ore processing plant and the metal fabrication plant accepts copper and produces goods. With the copper vector enabled these 2 plants will also process iron ore and steel respectively if available.

The following parameter settings are available :

0 – [default] feature deactivated.

1 - adds paper industry (paper, paper mill and printing works) in temperate climate.

2 – adds food industry (food, food processing plant and town buildings accepting food) in temperate climate.

4 – adds iron ore/steel industries (iron ore, steel, iron ore mine, ore processing and metal fabrication plants) in an arctic game.

8 – adds copper industry to either temperate or arctic games.

128 – enables new cargo/industry support in general.

This parameter controls 'new' industry/cargo support as follows :

1) it is deactivated by default.
2) any ECS vector loaded will activate this feature automatically.
3) for any other 'new' industry/cargo sets, e.g. Pikka Basic Industries, Brick Chain, Tourist Tower to name a few, parameter 2 must be set to 128.
4) if no other 'new' industry/cargo sets are loaded, you may play with the internal extra added industries.
5) there is at least one freight wagon available at any one time in a game, that carries the 'new' cargo types. Also, you can use NG or SG at will, all 'new' cargo types are carried by NG too.
6) this parameter is ignored, if ECS (any vector) sets are activated; the CanSet will support those sets regardless.

New Industry/Cargo Option [continued]

If you would like to have more than one internal industry you need to add the parameter values together; e.g. to have paper and food, specify '3', for all industries, specify '15'.

Warning : If you use any value between 1 and 15, then you should not have any other graphics files that add/modify new cargo/industries activated as they may interfere with the proper functioning of the internal industry/new cargo feature. It is recommended, that you don't change this parameter half way through a game; you should always start a new game, if changing this parameter.

Further, CanSet will automatically deactivate all internal industry/cargo types if ECS (any vector) sets are detected or the parameter value includes 128.

Credits

Graphics / Art

Dan MacKellar [DanMack]
uzurpator
mnorman
NS37
Born Acorn (UAC/MLW Turbo)
ISA (GE 'Evolution' ES44DC/AC)
lifeblood (train depots)
OzTransLtd (modifications, ETD)

Testing

wallyweb

Coding

OzTransLtd

Other

Narrow Gauge Track System by Cornelius
User Guide by OzTransLtd

Copyright

Copyright © 2005-2008 by Team of Canadian Trains Set; If you wish to modify for personal use, or use, any graphics and art of this set, please ask for prior permission. However, the individual elements remain the property of their respective team members. Modifications to or use of code (NFO) is not permitted.

Technical Information

Name : Canadian Trains Set

Version : v0.3d [18 Apr 2008]

Graphics ID : 43415362
[last digit likely to increase with new releases]

Active Sprites 'Trains' category : 7,535

Known Issues

The following are issues that have not been resolved yet or could raise queries :

- **Cargo types valuables and gold [ECSBasic vector]** :
  With the default setting in ECSBasic vector, gold replaces valuables in temperate. The CanSet indicates (in a temperate climate game) that it transports valuables, but in fact wagons do carry and/or are refittable to gold. This is not a bug, just something the player needs to be aware of.

- **Rail vehicle menu/window in the depot window** :
  The use of the reverse vehicle function may or most probably will cause vehicles to be misaligned when reversed. Most vehicles in the CanSet do not cater for being reversed using the Rail Vehicle Menu. Do not complain about such reversed vehicles. Wagons should not be reversed ever. Full length engines (8/8th) could be misaligned after reversal; other shorter engines can be reversed as they have been implemented to handle either direction. Many other trains, such as push-pull, will have graphical glitches.

- **Multi-headed Steam Trains** :
  Should you wish to have multi-headed steam trains with engines from the same company (e.g. CNR, CPR etc) do the following : purchase a number of engines (can be different by vehicle ID) separately until you have the desired liveries, which are chosen at random in many instances. Sell unwanted ones, then shunt engines together using 'ctrl-click' on engines to construct your train. Do not 'ctrl-click' buy them, as you may not see what the final livery is going to be.

Frequently Asked Questions [FAQ]

If you encounter any problems with the set, you may find the answer or a solution here :

- **Resource Conflicts**
  The GRF Status Window [TTDPatch] may show messages like :

  "GRF conflict with existing definitions (resource -10 at sprite nnn)"

  You may have the internal industries activated [parameter 2 set to values 1 .. 15], and at the same time 'new' industry/cargo sets loaded. They are mutually exclusive. You need to set parameter 2 to either 0 or 128. If you wish to play with the set internal extra industries, you must deactivate other 'new' industry/cargo sets, with the exception of a tourist industry.

- **Vehicles are not refittable to ECS cargo types**
  Vehicle detail information shows [e.g.] : *"Cargo (refit to): oil (20'000 lt), goods (40 crates), food (25t), [other liquid cargo (23)]"* but you cannot refit the vehicle; e.g. the oil tanker to oil.

  The CanSet assumes, if you have one ECS vector loaded, you have all of them and it will indicate, in the vehicle detail window, what cargo types a particular vehicle should be refittable to. However, if the relevant ECS vector is not loaded, you may not be able to refit a vehicle to a particular cargo type. The "Refittable to : ..." information shows the cargo types the vehicle is actually refittable to. If the cargo type in question is not shown, then you may not have loaded the ECS vector, that deals with the cargo type in question.

OpenTTD vs TTDPatch

Some feature of this set differ between TTDPatch and OpenTTD; some of the differences are explained below :

- **Year of Introduction of engines and wagons**
  A TTDPatch game (currently) cannot start earlier than 1st Jan 1921; however an OpenTTD game can be started much earlier. This set has the 4-6-0 'Ten Wheeler' steam engine designed in 1902 (narrow gauge) and 1908 (standard gauge) together with a set of passenger coaches and freight cars. The game will then make the 4-6-0 'Ten Wheeler' available within 2 years of the design year; or if you are lucky, you may get an invitation by the vehicle manufacturer to test a vehicle earlier.

  Therefore, starting an OpenTTD game as early as 1902 is an option.

Update History

v0.3d – Update [18 Apr 2008]

- narrow gauge steel passenger coach had incorrect sprite in \-view; fixed.
- copper ore mine was available when it should not be; fixed.
- added Alco/MLW DL535E narrow gauge diesel engine.

  The following is only available with set internal cargo/industry feature and with copper vector selected :

- added copper, the metal to list of 'new' cargo types.
- added copper livery to Gondola, now refittable to copper, the metal.
- made box cars (SG+NG) refittable to copper, the metal.
- transformed TTD 'original' Steel Mill into 'Ore Processing Plant'; processing iron ore and/or copper ore with production boosted (metal output 50 % faster) with coal supplies.
- transformed 'Copper Factory' into 'Metal Fabrication Plant', accepting steel and copper, producing goods.

v0.3c – OpenTTD compatible Release [21 Mar 2008]

- Speed Limiter Feature, further problems fixed.
- for some freight cars, no fee was charged for refitting to other cargo types and refitted capacity was not as advertised; now fixed.
- Now OpenTTD compatible.

v0.3b – Minor Update [14 Mar 2008]

- Misaligned 4-6-2 Pacific II fixed.
- Problems with Speed Limiter Feature fixed.
- MLW RS18 and GMD FP7 refitted to tourists showing freight livery fixed.
- GMD FP7 post 1987 in VIA livery, did not change livery to either CPR (red) or CNR (striped), if freight train; now fixed.
- New Narrow Gauge Ore Container (bin) Flat Car added, liveries shown, when 'Container' Flat Car is refitted to iron ore, copper ore or clay.

v0.3a - Initial Release [28 Feb 2008]

The Canadian Trains Set vs Other Sets

This set is not compatible with any other train vehicle sets. It uses almost all 116 vehicle slots (IDs). Further the AI Support and Vehicle Upgrade (AutoReplace) features could be impacted negatively with the use of other train vehicle sets. You should not have any other train vehicle sets activated while this set is in use.

CanSet v0.2 was playable in conjunction with the USSet; this is no longer the case. Should you wish to use a few train vehicles from the USSet together with the CanSet v0.3; then we may be able to incorporate these in a future update, as there are a few IDs left, although reserved for a few more Canadian vehicles.

By the way, the only train (from the US Set), that is still not available in v0.3 is the "BBD Jet Train (Turbine)"; all others have now been included in v0.3, including the "End-Train-Device [ETD]".

In case you would like to use the CanSet v0.3 in saved games, where v0.2 was in use, you will most probably encounter problems. There are significant differences between the 2 versions, therefore CanSet v0.3 received a new GRFID. It is highly recommended, that you start a new game.

Narrow Gauge Rail System

The Canadian Trains Set contains some narrow gauge rolling stock; 3 steam engines, 4 diesel engines (including the newly added Alco 'Shovelnose' in 3 liveries and the Alco/MLW DL535E) and a complete set of passenger, mail and freight wagons. The AI makes use of the Narrow Gauge Rail System (more details under 'Canadian Trains Set vs the AI').

The **Narrow Gauge Track System** (NGRails) by Cornelius, essential to operate narrow gauge rolling stock, has been included in the Canadian Train Set; thus providing a complete solution without the need for an external graphics file (.grf) to have narrow gauge tracks. Many thanks go to Cornelius for allowing the CanSet to have the Narrow Gauge Track System integrated into the Canadian Train Set.

Why should you use Narrow Gauge ? It could be to your advantage. The CanSet has a distinct cost structure; i.e. purchase costs are low but running costs are high and you need to maintain profitable services otherwise the running costs will bankrupt you.

The AI knows all about that, if it builds those ridiculous spaghetti networks, that do not run more or less directly to their destination, they won't be making any money. Now, with the Narrow Gauge Rolling Stock and Track System; track construction, purchase costs and running costs are lower compared to standard gauge. That means, your dollar, and that of the AI, will go further especially in the early years.

Canadian Trains Set vs AI

As we all know, the AI is rather less intelligent when it comes to building rail networks. But to help things along a bit, there is a comprehensive recipe book for the AI included in the Canadian Train Set. It gives the AI a fair chance to build reasonable and interesting rail services.

For passenger services, the AI will choose between narrow gauge for small short lines; or standard gauge for medium to more extensive services.

For freight services, the AI will choose the narrow gauge system, except for heavy freight haulage, like iron ore, steel and paper, which it implements using the standard gauge track system.

The AI purchase feature also caters for all supported 'new' cargo types. However, play-testing with ECS vectors has revealed, that the AI has difficulty making money out of servicing ECS industries. That is mainly due to low industry outputs, caused by the lack of necessary and required supplies to boost production in the first place. This is not a fault of this trains set.

In addition, if you have 'AutoReplace' enabled, the AI will upgrade its fleet of locomotives to more powerful and faster ones when they become available.

If you observe some rather bad choices of rolling stock, report it and maybe better choices can then be suggested; after all the AI is a fast learner, but it needs to be told.

Climate

The Canadian Trains Set is playable in Arctic and Temperate climate games; most vehicles are available in both climates; however, there are exceptions.

The following engines/vehicles are only available in a temperate game :

- Z1a Class Electric
- CC&F EMU
- X10a Class 4-6-4T tank engine
- BBD MR-90 EMU-2
- GMD GP40TC push-pull engine
- Cab Control Car 'single'
- ACP/APU HEP Unit, push-pull cab control car
- Road Railer freight car

The following engines/vehicles are only available in an arctic game :

- T1 Class 2-10-4 'Selkirk' steam engine
- GMD GF6C electric freight engine

Note : some freight cars are only available if at least one of the cargo types they carry is available in game.

Random Liveries

There are many vehicles, that have their liveries selected at random. This may be different liveries for the various railway companies (e.g. CNR, CPR, ONR, VIA etc) or simply different liveries for wagons and their load. This is indicated in the **Vehicle Purchase Detail Window**; e.g. :

'**Livery (at random) : TH&B, CNR or CPR**'

If you like to purchase a particular livery; just keep buying the vehicle until you get what you want and then sell the others for a full refund. The liveries on offer are dependent on climate and/or game year.

Company Liveries

There are many vehicles (locomotives and wagons), that come in liveries of the various railway companies (e.g. CNR, CPR, ONR, VIA etc). Engines, that do not carry cargo, are selected at random (see previous page); the ones with cargo can be refitted to other liveries, passenger coaches can in most cases be refitted to the various company liveries or, like freight wagons, take on a livery depending on the locomotive they are attached (e.g. If the locomotive is CNR, then the majority of wagons, if not all, are CNR too). Some liveries are also dependent on the type of wagons in the train (e.g. add a Steam Generator Unit (SGU) to a BBD LRC-3 and you get VIA 'blue' passenger coaches). All these options are indicated in the **Vehicle Purchase Detail Window**; e.g. :

'**Livery (by lead engine) : CNR, CPR or TTX**'
'**Livery (refit to) 'stainless steel' or LRC**'
'**Livery (company) : VIA**'
'**Livery (available) : ONR 'Northlander' TEE**'

If you like to build a train depicting a particular railway company, you need to start with the lead engine. The liveries on offer are also dependent on climate and/or game year.

Company Liveries [continued]

The following is an example of randomised vehicle liveries (the bare trays) and randomised load (the containers). The freight wagons will get their livery when purchased and retain that livery throughout their life. The load (containers) will be different each time a wagon receives new cargo.

Automatic livery selection of entire trains is sometimes also offered. In the following example, CPR MLW 636 engines (train 1) with modern ore cars attached would receive 'Cartier' ore cars with the CPR 'Cartier' engine (train 2); engines are selected at random.

'New' Cargo Support

Overview

The Canadian Trains Set supports almost all cargo types; firstly it covers all TTD 'original' default cargo types from the arctic and temperate climates including copper ore from the sub-tropical climate. At any time in a game, there will be at least one freight car (standard and narrow gauge) available to transport available cargo types.

Further, it supports all ECS cargo types, in all 41, as defined in wiki specifications as of 11 January 2008, for arctic and temperate climates. Cargo types not supported are sulphur and all uranium variants. Copper is now supported (v0.3d).

Sulphur had to be excluded. There are a limited number of cargo slots available, therefore sulphur got the chop; as it has been deemed not an important cargo type; i.e. it is not required for production of other cargo types.

Cargo Classes

Cargo Classes have not been used for supporting 'new' cargo types, due to their flawed nature and implementation. There are a few exceptions though; Cargo Classes ...

- 'passengers', including 'express' passengers cover **Passengers** and **Tourists**.
- 'mail', including 'express' mail cover **Mail** and **Luggage**.
- 'armoured', including 'express' armoured cover **Valuables**, **Gold** and **Diamonds**.
- 'express' only covers **Goods**.

All other cargo types are supported via Cargo Labels only.

Cargo Labels

Cargo types, other than mentioned above, are supported via Cargo Labels; i.e. if the cargo type is unknown to the Canadian Trains Set it will not be supported. If there are any industries producing such unsupported cargo types your only option is to transport them by road, sea or air using your preferred non-train transportation sets.

What freight cars carry what cargo types ?

Express Car, available 1920+, universal, not speed limited, freight car transports :

Goods, Food, Mail, Valuables, Gold and Diamonds

Hopper, available 1920+, an open hopper style freight car in 2-bay (1920-1945), 3-bay (1935-1970) and unit train (1965+) design transports :

Coal, Gravel and Sand

Ore Hopper, available 1920+, an open ore hopper in early (1920-1970) and modern (1960+) design, transporting :

Iron Ore, Copper Ore and Clay

Tank Car, available 1920+, in early (1920-1965) and modern (1965+) design transports liquid cargo types of :

Oil, Goods, Food, Dyes, Refined Products, Plastics and Petrol (Fuel Oil)

Box Car, available 1920+, the most universal freight car, transporting almost anything :

Goods, Steel, Copper and Wood Products (Lumber)

Grain, Wheat, Cereals, Food and Oilseeds
(until 1959, 1960+ see Covered Hopper)

Paper

Bricks, Glass, and Wool

Cement, Dry Fertiliser, Fibre Crops, Lime and Potash
(until 1959, 1960+ see Covered Hopper)

Vehicles
(until 1954, 1955+ see Auto Rack)

Refrigerator Car, available 1920+, perishable goods freight car to transport :

Food, Goods, Fish and Fruit

Covered Hopper, available 1960+, transporting fine particle type cargo :

Grain, Wheat, Cereals, Food and Oilseeds
Cement, Dry Fertiliser, Lime, Potash, Sand and Goods

Flat Car, available 1920+, including **Centrebeam Flat** and **Woodchip Car** (available 1965+), transporting :

Wood and Wood Products (Lumber)

Gondola, available 1920+, a heavy goods cargo freight car, transporting :

Steel, Copper, Goods and Wood Products (Lumber)

Livestock Car, available 1920+, for the transport of :

Livestock

Auto Rack, available 1955+, a special purpose freight car to transport :

Vehicles (Automobiles) and Goods

'New' Cargo Support [continued]

There are other freight cars that transport some of the above listed cargo types; for some of them see also the following freight cars :

Goods – HiCube Box car (1967+), Intermodal Flat car (1957+), Container Flat Car (1952+), Doublestack Container car (1985+), Auto Rack (1955+) and Road Railer (1986+)

Food - HiCube Box car (1967+), Intermodal Flat car (1957+), Container Flat Car (1952+) and Doublestack Container car (1985+)

Valuables, Gold, Diamonds and Mail – Lightweight Mail car (1938+)

Paper - HiCube Box car (1967+)

Steel – Steel Coil Car (1965+)

- - -

Food, Mail, Valuables, Gold and Diamonds
see the electric Wood Interurban Motor Coach (1920+)

Mail
see the EMC Doodlebug (1920+), the Budd/RDC (1949+) and the Heavyweight (HW) mail car, as well as the UAC/MLW Turbo Train (1967+, not shown)

- - -

Narrow Gauge Rolling Stock
all cargo types are transportable too by at least one narrow gauge freight car

'New' Cargo Support [continued]

Copper Industry

The set internal industry/cargo feature contains the newly (v0.3d) re-designed copper vector, including iron ore/steel industry. It is available in both temperate and arctic games and is enabled via parameter 2 (New Industry/Cargo option). Graphics-wise it uses the TTD 'original' graphics, but the secondary industries have been modified and its internal mechanisms modernised.

In a temperate game it automatically deals with the iron ore/steel vector; in arctic iron ore/steel can be enabled separately.

It uses the following cargo types/vectors:

- Iron Ore >> Steel >> Goods.
- Copper Ore >> Copper >> Goods.
- Coal (used to operate furnaces and boost metal outputs)

It involves the following Industries :

- Iron Ore Mine
  produces iron ore; TTD 'original'

- Copper Ore Mine
  produces copper ore; TTD 'original' from sub-tropics

- Coal Mine
  produces coal; TTD 'original'; not a required resource, but it will allow the Ore Processing Plant to operate more efficiently and boosts metal output by 50 %; i.e. the throughput of the plant is increased by 50 % if supplied.

- Ore Processing Plant (steel mill replacement)
  accepts iron ore, copper ore and coal; produces steel from iron ore and copper from copper ore; coal will keep the furnaces operational and if supplies in excess of 100 t are available the throughput of the plant is increased by 50 %.; i.e. 4 tons of coal will process 24 tons of ore at a time instead of 16 tons without coal supplies.

- Metal Fabrication Plant (sub tropical factory)
  accepts steel and/or copper to produce goods.

How does Coal influence Ore Processing ?

Coal is used to operate the furnaces, they require 48 tons of coal per month; a regular supply of coal will ensure that the plant works efficiently. Supply at least 100 t every 2 months and all will be fine. The furnaces will shut down when no coal is available and take about 10 days to fire up once coal has been supplied. Operating furnaces will ensure that ore can be processed immediately upon arrival.

If no coal is supplied, just ore ! Plant operators have an emergency supply of coal available (not indicated anywhere). They will not burn coal unnecessarily, so the plant will remain shut down. When ore is supplied (but no coal), operators will use emergency coal to start the plant. It will take 10 days until ore can be processed; once all available (waiting) ore has been processed the plant will be shut down again taking about 10 days. You have an efficiency penalty with no coal supplies.

How can you tell what is happening ?

Graphically, the fire in the furnaces is lit when the plant is operational; an operational plant is able to process ore immediately upon arrival. Molten steel/copper is visible when the plant is processing ore.

The industry window displays, apart from waiting supplies; iron ore, copper ore and coal, the status of the processing plant as follows :

- Plant shut down, due to lack of coal.
- Furnaces being fired up.
- Plant is operational, ready for ore processing.
- Currently producing steel ... copper ... or steel and copper ...
- Furnaces being shut down.

It takes about 10 days from the time ore is supplied until the plant starts processing; however a small coal supply of approximately 50 tons per month will keep the plant operational and allows the processing to start immediately upon arrival of ore. The plant is capable to process about 128 tons of ore every 3.5 days and produces same amounts of either steel or copper. If you have in excess of 100 tons of coal waiting, production is boosted to 192 tons of ore every 3.5 days. Plant capacity is approximately 1,100 or 1,600 tons per month respectively. The plant will operate at full capacity with coal supplies of 320 tons per month (including the 50 tons needed for the furnaces).

Any Restrictions ?

- There are no stockpiling limits; supply as much as you want.

- Coal is not a required resource, but it will output steel and/or copper 50 % faster.

- Constructing industries – an industry cannot be built within 16 tiles (as the crows fly) of a conflicting industry; the rules are as follows :

  - Ore Processing Plant : iron ore mine, copper ore mine, coal mine, factory, power station and metal fabrication plant.
  - Metal Fabrication Plant : ore processing plant and factory.
  - Iron ore, Copper ore and Coal mines : ore processing plant.
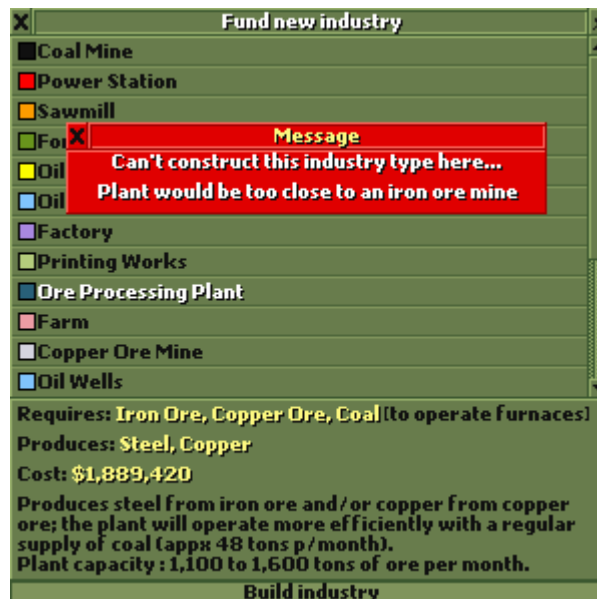
Technical Information :

- 1 ton of iron ore produces 1 ton of steel.
- 1 ton of copper ore produces 1 ton of copper.
- coal is just accepted, same as with power station, but influences the plant process.
- every 3.5 days the plant is capable of producing 16 tons of metal [i.e. either 16 t of steel, 16 t of copper or 8 tons of steel and 8 tons of copper] in 8 batches = 128 tons of metal.
- if less than 16 t [or 8 + 8 t] of ore is waiting no production of metals happens; waiting ore will remain until sufficient quantities are available.
- for each batch, if 4 tons of coal (in excess of 100 tons) is waiting the production of metal is boosted by 50 %; i.e. instead of 16 t of metal 24 t are processed/produced.
- the monthly plant capacity is approximately 1,100 (1,650 with coal) tons of ore.
- there are no monthly production changes (not yet).
- there are no planned closures of these industries.

Note : If game play suggests lower/higher values they can be adjusted in future updates of the set.

'New' Cargo Support [continued]

The following table lists all the cargo types that the Canadian Trains Set can transport :

BRCK	Bricks
CERA	Ceramics
CERE	Cereals
CLAY	Clay
CMNT	Cement
COAL	Coal*
COPR	Copper
CORE	Copper Ore*
DIAM	Diamonds*
DYES	Dyes
FERT	Fertiliser
FICR	Fibre crops
FISH	Fish
FOOD	Food*
FRUT	Fruit*
GLAS	Glass
GOLD	Gold*
GOOD	Goods*
GRAI	Grain*
GRVL	Gravel / Ballast
IORE	Iron Ore*
LIME	Lime stone
LVST	Livestock*
MAIL	Mail*
OIL_	Oil*
OLSD	Oil seeds
PAPR	Paper*
PASS	Passengers*
PETR	Petrol / Fuel Oil
PLAS	Plastic
POTA	Potash
RFPR	Refined products
SAND	Sand
STEL	Steel*
TOUR	Tourists
VALU	Valuables*
VEHI	Vehicles
WDPR	Wood products / Lumber
WHEA	Wheat*
WOOD	Wood*

* indicates TTD 'original' cargo type

Automatic Vehicle Upgrade (AutoReplace)

*** This is a TTDPatch only feature   ***

OpenTTD has its own Upgrade/Replace Vehicle Feature,
with no input by the CanSet currently.

Automatic renewal and/or upgrading of locomotives in time can be enabled. There are many ways how to configure this feature and it depends on your strategies in relation to vehicle breakdown, train servicing and automatic train renewal.

Primarily, whenever a train visits a depot for servicing and the age of the engine is within the automatic renewal period [autorenew switch]; then either the engine is upgraded to a better model (if one is available) or simply renewed.

At the same time wagons are also renewed; they receive a fresh coat of paint (new livery, if available). The AutoUpgrade facility of this set has been extended to wagons too; however, TTDPatch does not yet support upgrading of wagons.

What is the difference between AutoReplace and AutoRenew ?

If a train is AutoReplaced, it will receive a new engine, that is different from the old one (by vehicle ID); e.g. a steam engine can be upgraded to a diesel engine. If no better or other model is available, then the train will just be AutoRenewed. In this case, the engine (by vehicle ID) will remain the same; however it may receive a new livery.

How to enable and configure AutoReplace ?

Here is one way how to enable this feature. Take the following consideration into account :

- Trains need to go to a depot for servicing on a regular basis. To achieve this you can put a depot or 2 in the order list and set the service flag. These depots should be strategically placed, good places are near station exits.

To configure this feature, the following patch switches need to be set for a working solution :

- **enginespersist off**, recommended, to remove obsolete engines from the vehicle purchase list.

- **gotodepot on**, required to add depots to the order list of trains.

- **forceautorenew [off/on]**, required, set to **off**, if depots have been added to order list; or set to **on**, if trains need to be forced to visit a depot when vehicle renewing is due.

- **servint [ddd]**, required, if trains have depots in their order list with service flag set; set service interval in number of days [ddd]. The lower the service interval the more often trains visit the depot for servicing. As a guide, set it to between 1 and 3 years (360 to 1080 days) if you have vehicle breakdown set to off otherwise a much lower interval will be required.

- **autorenew [-mm]**, required, to have this feature enabled. This switch also specifies, when automatic renewal or replacing of vehicles takes place. As a guide, set it to about twice the service interval, negative in months; or calculate it as follows service interval (servint) in days divided by 13.8 rounded to the next whole number and specify it negative in order to get the vehicles renewed/replaced before they get too old. By calculating it this way, you will avoid 'vehicle is getting old' messages.

- **autoreplace [on/reliability]**, required, to have 'AutoReplace' enabled. If all the above switches have been set, but 'AutoReplace' is not; then automatic renewing of vehicles will still take place, but only if the locomotive in question has not become obsolete; i.e. obsolete engines will only be renewed or upgraded if 'AutoReplace' is enabled. As a guide , for the CanSet, specify 75 % reliability instead of 'on', which defaults to 80 %.

Sample configuration for ttdpatch.cfg for situations, where vehicle breakdowns are disabled :

- **enginespersist off**
- **gotodepot on**
- **forceautorenew off**
- **servint 1080**
- **autorenew -78**
- **autoreplace 75**

Sample configuration for situations, where vehicle breakdowns are enabled :

- **enginespersist off**
- **gotodepot on**
- **forceautorenew off**
- **servint 150**
- **autorenew -11**
- **autoreplace 75**

Push-Pull Trains

Normally, when a train reaches the end of a line or stops at a terminus station and reverses its direction the engine will 'jump' to the other end of the train and the journey continues. With Push-Pull enabled trains this is not the case; if a train enters a terminus station engine leading, then it will leave that station engine trailing.

The Canadian Trains Set has a number of such Push-Pull capable trains.

Every Push-Pull train can be built engine leading and cab car trailing, or cab car leading and engine trailing. The choice is with players.

There are 3 kinds of such trains :

1) **Push-Pull Train with Cab Control car** :

These trains consist of an engine and require a cab control car to be push-pull enabled. Some engines will require a trailing cab control car, others can have a cab control car attached, if not they won't be push-pull enabled.

The following engines are push-pull capable :

- Go-Transit GMD GP40-2W
- Go-Transit GMD GP40TC
- Go-Transit/West Coast Express GMD F59PH
- CPR FP7 [red] passenger [1]
- CNR X10a tank engine [1]

Note: push-pull capable engines, that require a cab control car, are shown with half a passenger coach attached in the Vehicle Purchase Window. The other engines [1] may have a cab control car attached.

A cab control car is an unpowered game engine; it cannot head a train without a trailing engine, that engine must be one listed above.

The following cab control cars are available :

- Go-Transit ACPU/APU HEP Unit
- CNR/Go-Transit passenger driving trailer
- CPR/Go-Transit/West Coast Express bi-level driving trailer

Note: cab control cars are shown with half a passenger coach attached in the Vehicle Purchase Window.

2) **Push-Pull Trains without Cab Control car** :

Some trains do not require a cab control car; they simply use livery overrides to mimic push-pull behaviour.

The following trains do not require a cab control car :

- Werkspoor RAm TEE, with 3 lightweight passenger coaches
- ONR 'Northlander' TEE headed by FP7 engine in ONR livery and 3 lightweight passenger coaches
- BBD MR-90 EMU (2 car train sets)

Note: these engines [except FP7] are shown with half a passenger coach attached in the Vehicle Purchase Window.

3) **The CNR X10a Steam Special** :

This train is one of a kind. It is a steam train that should always travel engine first, but it is able to shunt, so it can be made to travel engine first on main lines.

The CNR X10a tank engine is push-pull enabled only with heavyweight [HW] passenger coaches and a Cab Control car 'single'. Any other configuration would make it a normal steam train.

Further, depending whether the engine or cab car is leading, the behaviour of this push-pull enabled train changes :

a) built with engine leading, it works in the same way as other push-pull trains listed under 1) above; i.e. sometimes the engine is leading, sometimes it is trailing and it travels at 80 mph (128 km/h) at all times traffic and track permitting.

b) built with cab car leading, there is a speed limit of 20 mph (32 km/h) applied whenever the cab car leads the train or during shunting. While the engine leads the normal speed of 80 mph (128 km/h) applies. For further information, on how to set up and operate this train correctly, see chapter 'CNR X10a Steam Special'

What are the rules for constructing push-pull trains ?

If you start with a leading engine, then for ...

·   **Go-Transit GMD GP40TC**, available 1966+ ...
    ... for engines built before 1973, you can attach lightweight coaches and a cab control car 'single' only.
    ... for engines built 1973+, you can either attach lightweight or bi-level coaches and a matching cab control car 'single' or 'bi-level'. Please note you cannot mix lightweight and bi-level coaches.

·   **Go-Transit GMD GP40-2W**, available 1973+ ...
    you can either attach lightweight or bi-level coaches and a matching cab control car 'single' or 'bi-level'. Please note you cannot mix lightweight and bi-level coaches; however you can attach a ACPU/APU HEP unit instead of a cab control car.

·   **CNR GMD GP40-2W**, available 1973+ ...
    this engine is not push-pull enabled; however by attaching coaches and a matching cab control car, you will still get a push-pull enabled train in Go-Transit livery (see above for Go-Transit).

- **Go-Transit GMD F59PH**, available 1988+ in temperate only, or
  West Coast Express GMD F59PH, available 1995+ in arctic only ...
  you can attach bi-level coaches and a cab control car 'bi-level' only.

- **CPR FP7** [red] passenger, available 1969 – 1983 (temperate) and 1969 – 1994 (arctic) ...
  you can attach bi-level coaches and a cab control car 'bi-level'. You will receive CPR livery;
  other configurations will result in an ordinary train.

- **CNR X10a tank engine**, available 1920 – 1955 ...
  for a push-pull enabled train, you can attach heavyweight coaches and a cab control car
  'single' only; other configurations will result in an ordinary steam train.

If you start with a leading cab control car, including ACPU/APU HEP Unit, then for ...

- **Go-Transit ACPU/APU HEP Unit**, available 1973+ ...
  you can attach either lightweight or bi-level coaches and a trailing GMD GP40-2W engine.

- **Cab Control Car 'single'**, available 1920+ ...
  ... for cab cars built before 1966, you can attach heavyweight coaches and a trailing CNR
  X10a tank engine only. (more information under CNR X10a Steam Special).
  ... for cab cars built 1966 - 1972, you can attach lightweight coaches and a trailing GMD
  GP40TC engine.
  ... for cab cars built 1973+, you can attach lightweight coaches and a trailing GMD GP40-2W
  or GMD GP40TC engine.
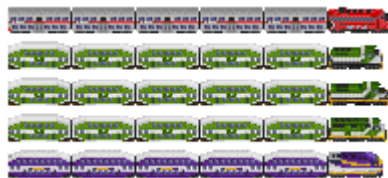
- **CPR, Go-Transit or West Coast Express bi-level Cab Control Car**, ...
  ... in a temperate game, available 1969 – 1972 in CPR livery; 1973 – 1983 in CPR or Go-
  Transit livery at random and 1984+ in Go-Transit livery only.
  ... in an arctic game, available 1969 – 1994 in CPR livery and 1995+ in West Coast Express
  livery only.
  ... only bi-level coaches, plus if CPR livery, a trailing GMD FP7 engine; GO-Transit (1973+), a
  trailing GMD GP40TC or GMD GP40-2W engine; or if in GO-Transit/West Coast Express livery,
  a trailing GMD F59PH engine can be attached.

**Note: When attaching the engine to complete your push-pull train, make sure it faces in
the direction shown above; if not turn it around, you can use the Rail Vehicle Menu.**

Push-Pull Trains [continued]

The following trains are push-pull capable, without a cab control car :

· **ONR 'Northlander' TEE**, available 1976+, with either Werkspoor RAm TEE or ONR FP7 engine.

· **BBD MR-90 EMU-2**, available 1995+, as multiple unit 2-car train sets.

- - -

Note : some engines / cab control cars are not available in an arctic game.

CNR X10a Steam Special

What is the CNR X10a Steam Special ?

This train is push-pull capable and can operate without hot-swapping the engine when reversing at terminus stations or end of lines. If entering a terminus station engine leading, it will leave engine trailing. But it is more than that, depending how the train has been built, the train needs to be shunted before it can leave a terminus station, otherwise it will travel at a reduced speed of 20 mph (32 km/h) whenever the engine is trailing.

Recommendation :

It is recommended you use TTDPatch 2.6 alpha [r1825+] for enhanced station unloading/loading feature of TTDPatch. In OpenTTD, this train behaves slightly differently, see notes at end of this chapter.

How to purchase/construct this train ?

There are several vehicles involved :

1) a CNR X10a tank engine
2) one or more heavyweight passenger coaches (no enforced limits, except the power of the engine)
3) one cab control car 'single'

First you need to purchase the cab control car, then attach one or more passenger coaches and finally the X10a tank engine. You must do it in that order; once the engine is attached the train is locked and you cannot add any more coaches. The combination of a cab control car and the X10a tank engine in a train enables push-pull mode.

The engine is attached facing either way at random. However, the selected direction depends on the leading cab control car; this means, if you like the engine to face the other way, you must re-purchase the cab control car. Further, you must let the game attach the engine automatically; i.e. buy it ctrl-click and don't have any other trains in the depot. Do not use the Rail Vehicle Menu and/or Ctrl-click to move the engine; if you do, it may face the wrong way. The engine and cab control car must face 'forward', but you cannot see the direction they face, as the livery shown is no indication.

Further, the cab control car can only have heavyweight passenger coaches and the tank engine attached. No mail cars or other passenger/freight cars allowed. This train can be built from the start of a game until the end of 1965; although the tank engine will become obsolete in 1955 and the coaches in 1950, unless 'enginepersist' has been turned on. 1966 and beyond, the cab control car 'single' will have other duties with diesel operated push-pull trains and can no longer be used on this steam special. However, any existing train at that time can continue to operate as long as you wish, but you cannot alter any such train any more.

How to operate this train ?

First you need to set up proper shunting facilities near your terminus stations. Pass-through stations need no special considerations. You will need to undertake a 3-way shunting operation at every terminus station.

After the train has arrived at a terminus station and passengers have alighted, the train needs to reverse into a siding. It will do that cab car leading at safety speed. For the second leg, it needs to shunt forward into another siding (could be a train depot), before returning to the station cab car leading. Once back at the station, passengers will board and the journey can continue.

You can include one train depot as part of the shunting exercise, but you need to be aware that the train will always leave a depot with the vehicle leading, that was at the head of the train when it was constructed. In our case, that would be the cab control car, so the depot would be suited for the second leg of the shunting operation only.

How to set up the train orders ?

This is very important, that you get it right. Unfortunately, there are a few flaws in TTDPatch that complicate things, but nevertheless this can be over come.

First a few rules :

- Whenever a train stops at a terminus stations, it must stop twice to stay synchronised with the direction of the train and its speed settings.
- Sidings in your train schedule must be set as 'Non-Stop' orders; or simply use waypoints to direct your train for shunting.
- When having a train depot in the schedule you must **not** set the 'Service' flag for the depot.
- Don't let your train look for a depot on its own accord, otherwise it will suddenly face in the wrong direction. How you set up train servicing is important.
- Make sure your train does not travel down a mainline with the cab control car leading, it would be a very slow journey and your passengers won't like it.

Let's have a look at a properly set up train schedule. **This schedule requires TTDPatch 2.6 alpha [r1825+]**. Our train travels between Montréal and Delson via St Constant and back. St. Constant is a pass-through station and Montréal and Delson are terminus stations. Therefore a shunting schedule for Montréal and Delson needs to be set up.
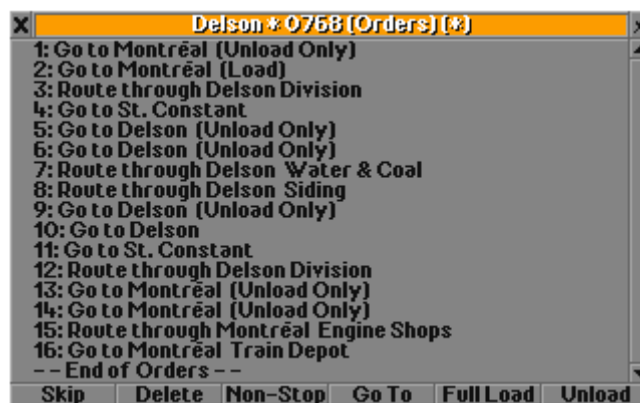
Let's start with order #13, our steam special is just arriving at Montréal.

- #13 - train has arrived, passengers alight and start roaming the city of Montréal.
- #14 – second stop at Montréal; this stop is necessary to enter shunting mode, the train now faces in the right [game] direction and we can set the speed limit to 20 mph. Please note, the 'Unload Only' order, so that we don't pick up any passengers (not yet anyway).
- #15 – train now reverses towards the siding for coal and water pick up.

- #16 – train moves forward into the depot in any case, servicing would take place, if required or due.
- #01 – train returns to the station, cab car leading; please note, still no passenger pick up at this point in time.
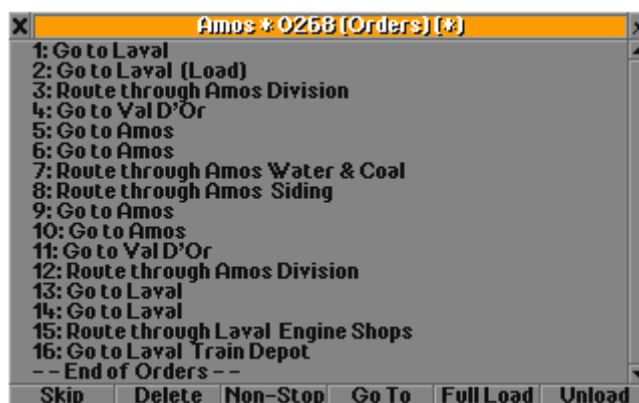- #02 – again a second stop at Montréal, necessary to set our normal speed of 80 mph. At the same time we take on new passengers. You do not need to use 'Full Load', but you can.

Our train is now ready for departure from Montréal and will soon be on its way to Delson via St.Constant, where we would repeat the exercise.

Next, let's have a look at another train schedule. **This schedule is for players, that do NOT use TTDPatch 2.6 alpha [r1825+]**. This time, our train travels between Laval and Amos via Val D'Or and back. Val D'Or is a pass-through station and Laval and Amos are terminus stations. Therefore a shunting schedule for Laval and Amos needs to be set up.

```
X  Amos * 0268 (Orders) [*]       📌
1: Go to Laval
2: Go to Laval (Load)
3: Route through Amos Division
4: Go to Val D'Or
5: Go to Amos
6: Go to Amos
7: Route through Amos Water & Coal
8: Route through Amos Siding
9: Go to Amos
10: Go to Amos
11: Go to Val D'Or
12: Route through Amos Division
13: Go to Laval
14: Go to Laval
15: Route through Laval Engine Shops
16: Go to Laval Train Depot
– – End of Orders – –
Skip  | Delete | Non-Stop | Go To | Full Load | Unload
```

Let's start with order #13, our steam special is just arriving at Laval.

- #13 - train arrives, passengers alight, any waiting passengers will board. Sorry about the inconvenience for having passengers on board during shunting. Unfortunately we cannot have an unload order, if we did that, arriving passengers would stay at the station and board our train at #01 or #14 again.
- #14 – second stop at Laval; this stop is necessary to enter shunting mode, the train now faces in the right [game] direction and we can set the speed limit to 20 mph.
- #15 – train now reverses towards the siding for coal and water pick up.
- #16 – train moves forward into the depot in any case, servicing would take place, if required or due.
- #01 – train returns to the station, cab car leading, to pick up new passengers.
- #02 – again a second stop at Laval, necessary to set our normal speed of 80 mph. At the same time we take on passengers to fill any still vacant seats. You do not need to use 'Full Load', but if you do use it, this would be the order you do it.

Our train is now ready for departure from Laval and will soon be on its way to Amos via Val D'Or, where we would repeat the exercise.

Please note the 'Route through' orders for #07 and #08, i.e. Amos Coal + Water and Siding. Incidentally these 2 are way points, but if they were stations, you would need to set the 'Non-Stop' flag.

Further, order #16, the train depot, do not set the Service' flag; if you do, the train would only enter the depot if a service is required and therefore get out of synchronisation.

Station with Shunting Yards at Amos

Shunting Yards with Depot at Laval

What are your other options ?

The X10a Steam Special can also be built with the X10a tank engine leading and the cab control car trailing. Everything mentioned above still applies; there are a couple of differences though.
They are :

- There is no speed restriction during shunting; therefore you will not need a double stop at a terminus station.
- You will need to swap the orders for shunting, if you have a train depot involved; i.e. visit the train depot before entering the siding.

Don't like shunting ? Then simply build your train steam engine first. It will still be push-pull enabled and will travel quite happily engine trailing from time to time.

By not having a cab control car in the train; you can attach any wagon to the engine and there won't be a difference compared to other steam trains.

Special Considerations for OpenTTD players ?

- Whenever the cab control car leads the train, the speed is reduced to 32 km/h and reset when trailing; whereas in TTDPatch a change of speed only happens, if the train has stopped at a station or leaves the depot. Also, in TTDPatch, the train must already face in the direction it will travel before it makes its final stop at a station.
- Regardless, whether the trains is built engine or cab car leading; it will always travel at reduced speed when the cab car leads.
- Building train with engine trailing; then the X10a will always have the driver cabin against the coaches. Want to choose the direction the X10a faces; build the train engine leading.
- Setting orders at terminus stations does not require a double stop; the shunting is much simpler and consists of :
  1. arrive at station an let passengers disembark (unload only).
  2. carry out shunting operation and return to station.
  3. have passengers board train, before departing.

Messages

During game play, especially when purchasing engines and wagons, you may come across messages. These messages will aid you in constructing your trains. Following is a list of messages and their meaning :

Road Railer Trains

The Road Railer is a special kind of freight wagon, due to its design it is not possible to have other freight cars in a train. It will become available in 1986+, but between 1986 and 2003 it requires a CPR engine; 2004 and beyond the engine at the time of purchase must be CNR. You can multi-head this train, but you must purchase the engine(s) first before attaching any Road Railers.

Not a Road Railer train, Road Railer cannot be attached.

This indicates, that you already have other wagons attached; therefore it will not be possible to have Road Railers added to the train.

Road Railer only train, vehicle cannot be attached.

Once you have a Road Railer attached to an engine, the train will become a Road Railer train. You cannot attach any other wagon(s) or engine(s), except Road Railers.

Not a CPR train, Road Railer cannot be attached.

It is earlier than 2004; Road Railers can only be attached to trains with CPR engines.

Not a CNR train, Road Railer cannot be attached.

The game year is 2004 or later; Road Railers can only be attached to trains with CNR engines.

ONR 'Northlander' TEE

The 'Northlander' is a Diesel-Multiple-Unit (DMU) train and consists of the engine and 3 passenger coaches. The engine can either be a Werkspoor RAm TEE or ONR FP7 and the train requires 3 lightweight passenger coaches.

'Northlander' TEE train, only lightweight coaches allowed.

For the 'Northlander' you can only attach lightweight (LW) passenger coaches.

'Northlander' TEE train already at maximum length of 4.

The 'Northlander' has a maximum train length of 4; you cannot attach any more coaches.

'Northlander' TEE train cannot leave depot, must have 3 coaches attached.

The 'Northlander' has a train length of 4; you need to attach more lightweight passenger coaches.

Push-Pull Trains

These trains are special, they travel either engine leading or trailing depending on direction and do have rules, how they can, should or must be constructed.

They consist of an engine, a few passenger coaches and a cab control car. For more information see chapter 'Push-Pull Trains' earlier in this guide.

Only 1 engine allowed.

A push-pull train can only have one engine; you cannot attach another one.

Only 1 cab control car allowed.

A push-pull train can only have one cab control car; you cannot attach another one.

Train does not have an engine.

You are trying to start a push-pull train, lead by a cab control car; but you have not attached an engine yet.

Train does not have a push-pull control car.

You are trying to start a push-pull train, lead by an engine; but you have not attached a cab control car yet.

Trailing engine/cab control car already attached; no more coaches allowed.

You already have attached either a trailing engine or cab control car; you cannot attach any more passenger coaches, the train has been locked. Remove the trailing engine/cab control car temporarily to attach more passenger coaches.

No longer an eligible push-pull train; cab control car not allowed.

You are trying to attach a trailing cab control car; however the train is no longer an eligible push-pull train. Some engines, like the GMD GP40-2, GMD FP7 and the CNR X10a tank engine, can have other configurations; i.e. they can operate as ordinary trains too. You may have added some freight cars, therefore the train can no longer be push-pull enabled; or you have multi-headed the train. Remove all but the leading engine and all wagons, bar eligible passenger coaches and try again.

Attach a 'bi-level' cab control car instead of a 'single' one.

You have started to build a push-pull train with bi-level coaches; such train requires a bi-level cab control car. If the train is headed by a GMD GP40-2 engine, you may attach a ACPU/APU HEP Unit instead of a cab control car 'bi-level'.

Attach a 'single' cab control car instead of a 'bi-level' one.

You have started to build a push-pull train with normal passenger coaches; such train requires a single cab control car. If the train is headed by a GMD GP40-2 engine, you may attach a ACPU/APU HEP Unit instead of a cab control car 'single'.

Lightweight passenger coach push-pull train; bi-level coaches not allowed.

You have started to build a push-pull train with lightweight passenger coaches; you cannot mix lightweight and bi-level coaches in the same train, therefore bi-level coaches cannot be attached.

Bi-level passenger coach push-pull train; lightweight coaches not allowed.

You have started to build a push-pull train with bi-level passenger coaches; you cannot mix lightweight and bi-level coaches in the same train, therefore lightweight coaches cannot be attached.

Only lightweight coaches and cab control car 'single' allowed.
Only lightweight or bi-level coaches and cab control car allowed.
Only lightweight or bi-level coaches and cab control car or APC unit allowed.
Only bi-level coaches and bi-level cab control car allowed.
Only lightweight or bi-level coaches and trailing GP40-2W engine allowed.
Only lightweight coaches and trailing GP40TC or GP40-2W engine allowed.
Only bi-level coaches and trailing GP40TC, GP40-2W or F59PH engine allowed.
Only bi-level coaches and trailing F59PH engine allowed.
Only bi-level coaches and trailing FP7 engine allowed.
Only heavyweight coaches and trailing X10a steam engine allowed.

All these messages tell you what sort of passenger coaches, cab control cars and trailing engines you are allowed to attach in any given situation They are issued whenever you try to attach a vehicle that is not allowed in a push-pull train. If you really want a particular vehicle, like a bi-level coach in your push-pull train, you may have to start with another leading engine, that does allow such passenger coaches.

Push-pull enabled engines not allowed on steam trains.

You are trying to attach a push-pull capable engine to a steam train; this is not possible due to set internal limits.

Other Messages

Only MR-90 EMU-2 car sets allowed.
MR-90 EMU-2 cannot be attached to any other train.

The BBD MR-90 EMU, is a special multiple unit train; you cannot attach any other engine/wagon to this train; nor can you attach these 2-car sets to any other train. You can multi-head any number of BBD MR-90 2 car sets though.

Attach lightweight coaches/mail cars to get Turbo cars.

With the UAC/MLW Turbo train, you can only attach lightweight (LW) passenger coaches and/or mail cars; you'll get Turbo train liveries with the lightweights.

Only lightweight coaches/mail cars allowed.

Certain engines/trains are intended for passenger transport only; therefore only lightweight passengers coaches and/or mail cars are allowed.

CPR 'Cartier', only Ore Hopper 'modern' cars allowed.

The MLW M636 engine in 'Cartier' livery is a special ore train; therefore only 'modern' Ore Hoppers can be attached.

Internal Set Failure, post bug report.

Should you see this message, then an internal set failure has occurred. You cannot start or stop a train because insufficient information is available. Post a bug report, preferably with a small screen shot showing the train in question, and we will look into it.

Standard Gauge – Rolling Stock

Overview of standard gauge rolling stock. Information by Dan MacKellar (DanMack).

STEAM LOCOMOTIVES

4-6-0 Ten Wheeler - The Ten Wheeler was extensively used on Canadian branch lines and locals until the very end of steam. Available 1910 (1920) in CN and CP livery.

4-6-4T X10a Class - These ten tank engines (Class X10a) were built in 1914 for the Grand Trunk Railway. They were used around Ontario and Quebec on suburban passenger runs. Not very high in HP, they can only haul a few coaches but they can do so very well. Available 1914 (1920).

4-6-2 'Pacific' - Pacific's also saw double duty in Canada both as freight and passenger haulers. Canadian Pacific owned many, as did CNR. Both are represented. Available 1912 (1920) in CN (2 variants), CP (2) and ONR (1) liveries.

2-8-2 'Mikado' - The Mikado is a good engine for those long-distance fast freight hauls. Overall a good general purpose loco. Again, both CN and CP had versions of this wheel arrangement. Available 1915 (1920) in CN (2 variants), CP (2) and ONR (1) liveries.

2-8-0 'Consolidation' - The Consolidation was the most popular wheel arrangement in North America. Both CN and CP had large numbers of these locos for both branch and mainline duties. It offers a small loco for your short runs at the beginning. Available 1920.

2-10-2 'Santa Fe' - The Santa Fe type was for many years the most powerful locomotive in Canada. CPR used theirs mainly in the mountains, CNR used theirs all over Canada. This loco is available in both CN and CP liveries. Available 1918 (1920).

U1 4-8-2 'Mountain' - The Mountain type is again one that was favoured by CN over CP. Like the Northern, CPR only had two 4-8-2's, CNR had 74. This loco is available in streamlined and non-streamlined versions. Available 1925 in CN livery.

2-10-4 'Selkirk' - The 'Selkirk' type was the largest loco on Canadian soil. Canadian Pacific took the first order in 1928, second order in 1938 and the last 6 were ordered in 1948. These locos were designed for hauling passenger trains over the Rockies. Available 1928.

4-6-4 'Hudson' - The Hudson type was Canadian Pacific's mainstay for passenger power in later years. CN preferred the Northern type, only having 5 Hudson's. Available 1930 in CN and CP liveries.

F2a Class 4-4-4 'Jubilee' - Looking for a locomotive to haul the new, lightweight 'Chinook' passenger train, CPR looked to the past and the 4-4-4 design. There were 2 classes of Jubilee, the F2a Class (included in the set) and the later built and more numerous Class F1a. Available 1936.

U2a Class 4-8-4 'Confederation' - What Hudson's were for CP, Northerns (called 'Confederations') were for CN. The Northern type could be found all over the system hauling both freight and passenger. CPR only had 2, CN had over 150. CNR still rostered one for excursions until 1981. Available 1938.

U4a Class 4-8-4 'Confederation' - Originally intended to include only one class of Northern, but since there's enough space, the U4a has been included too. The streamlined U4a Class Northern is part of a class of 10 that were built in 1939 to haul the Royal Train. Available 1939 in CN, CP and ONR liveries.

Standard Gauge – Rolling Stock [continued]

ELECTRIC LOCOMOTIVES

Z1a GE Boxcab - CNR had several boxcab electrics for passenger service around Montreal. Several interurbans around the country (Mainly in Ontario) also used these. The boxcab will be able to be used for both passenger and freight. Available 1917 (1920).

GE Steeplecab - Interurban lines around North America used these. There weren't many in Canada, but several rail roads in Ontario and Quebec used them. A lot of industrial/mining lines had these as well. Available 1920.

Wooden Interurban Motor Coach - Interurbans were an alternative to the heavier, more costly steam railways. Running nice and cleanly between cities all over Canada, the interurban car became a standard sight. These cars are refittable to mail, goods, food and valuables/gold. Can haul an express car or 2 as well. Available 1918 (1920).

Steel Interurban Motor Coach - Wooden interurbans gave way to heavier, faster steel cars, and Canada's interurbans followed their American counterparts. Available 1927.

CC&F Electric MU - In the 1950's, the box cabs around Montreal were supplemented by a number of EMU's from Canadian Car and Foundry (CC&F). These cars lasted in commuter service until 1995. Available 1952.

GMD GF6C - In the 1980's, the British Columbia Railway built a heavy coal branch into the mountains around Tumbler Ridge, BC. This marked the first, and so far only use of heavy electric in Canada. General Motors delivered 7 GF6C's in 1984 for use on this branch. These units were put into storage in 2000 and all except one have now been scrapped. Available 1984.

Bombardier MR-90 EMU - By the 1990's, the older box cabs and EMU's were wearing out. The Montreal Commuter Agency (STCUM) purchased a number of EMU's from Bombardier to replace the ageing electrics. Available 1995 in 2-car train sets.

DIESEL LOCOMOTIVES

EMC 'Doodlebug' - The Gas Electric car, or 'Doddlebug' was a standard on branch lines from the early 1920's to the late 40's. They were built by several manufacturers. The one in the set is based on an Electro-Motive car from the early 20's. Available 1920.

CLC/CNR '9000' - Canadian National had the distinction of owning the first mainline diesel in North America. No. 9000 was a two-unit loco that was eventually separated and both units were scrapped in 1946. It's distinction can't be overlooked however. Available 1928 [not available yet].

ALCo/MLW S2 - After the 9000, Canada's rail roads contented themselves with steam until ALCo brought out the S2 switcher. Both CN and CP purchased numerous units from both ALCo and it's Canadian subsidiary, MLW. Available 1943 [not available yet].

Budd RDC - The Budd RDC (Rail Diesel Car) was a replacement for the numerous doodlebugs in the late 40's. Many still toil on in commuter service, VIA Rail actually still rosters 5 cars. Liveries - CNR, CPR, VIA (After 1976), BC Rail (after 1976) Available 1949 for both passenger and mail services.

MLW FA-1 - While CNR preferred the F7 over MLW's FA-1, CPR owned a number of MLW FA-1's and no F7's. The FA-1 is similar in speed and HP to the F7, but offers a freight cab unit for CP until the C-Liner and the FP9. Available 1950 [not available yet].

GMD FP7 - Four feel longer than an F7A, the FP7A had a steam generator to heat passenger cars. The FP7 can haul both passenger and freight. Uses standard F7B units Available 1950 in CN, CP and VIA liveries.

MLW RS3 - MLW's RS3, like its ALCO counterpart, was designed to compete with GMD's GP7. Owned by CPR, CNR, Ontario Northland and Pacific Great Eastern (BC Rail), the RS3 wasn't as numerous as the GP7/9, but nonetheless was a common sight on branch lines in Canada. Available 1953 [not available yet].

FM/CLC 'C-Liner' - The FM 'Consolidation' line was about as popular in Canada as the Train Master was. CNR purchased the Passenger CPA16-5 and the freight CFA16-4. CPR only used the freight version. Available 1954 [not available yet].

GMD GP9 - The GP9 was the most popular road switcher in North America. CN and CP purchased large numbers of these units as well as their predecessor, the GP7. Livery - CN, CP, ONR and TH&B (temperate climate only). Available 1954.

FM/CLC H-24-66 - The 'Train Master' was Fairbanks Morse's 'Big Engine'. FM locos were built in Canada by the Canadian Locomotive Company in Kingston, Ontario. FM/CLC was always third place in Canada behind GMD and MLW. Only 21 Train Masters were sold in Canada. 20 to CP and 1 to CN. Available 1956 in CP livery.

MLW RS18 - The RS18 was MLW's answer to the GP9, just as the RS11 was from ALCo. The RS18 was a jack of all trades, seeing use on both passenger and freight trains. Some CN RS18's were rebuilt in 1967 for short-haul passenger service between Windsor, ON and Quebec City. Liveries - CN, CP, CN 'Tempo (1967-1978) Available 1956.

GMD SW1200RS - In the mid 1950's, a more heavy-duty switcher was needed. Both CNR and CPR had branch lines that were run by steam that needed to be replaced. The result was the SW1200RS unit. Distinctly Canadian, these units were switchers that thought they were road units. Able to reach speeds of 65MPH, these engines were at home both on the road and in the yard. Available 1957.

MLW RSD17 - The RSD17 was the Canadian version of AlCo's RDS15 - Only one was built. After demonstrating on BC Rail, CN and CP, this orphan was eventually adopted by CP and given the number 8921. She received a low nose in the early 90's, the 'Empress of Agincourt' was retired in 1995. It currently resides at the Elgin County Railway Museum in St. Thomas, Ontario. Available 1957 [not available yet].

DIESEL LOCOMOTIVES [continued]

MLW FPA-4 / FA-2 - Seeking to compete with GMD for the passenger loco market, MLW produced the FPA-2 and FPA-4 units, only CN received the latter. These units went to VIA Rail and were retired by 1989. Available in both CN and CP and later VIA Rail. Available 1958 [other than CN livery not available yet].

GMD GMD-1 - CN was in need of a light branch line loco in the late 1950's and turned to General Motors for the 'Canadian' Road switcher. The GMD-1 was the result and could be seen all over the CNR from the prairies to the East Coast to Vancouver island. CNR still has some of these locos on roster today. Liveries - CNR Green, CNR Stripe. Available 1958.

MLW C424 - The C424 was built for both CN and CP. CN retired theirs by 1989, but CP's toiled on until 1999. MLW's answer to GMD's GP35, it enjoyed more popularity than it's General Motors rivals. Liveries - CNR, CPR. Available 1964.
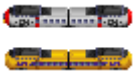
United Aircraft/MLW Turbo Train - First built for CNR in 1967/68, the Turbos were some of the first locos to go to VIA Rail in 1978 - and some of the first to be retired too. These trains were fast, however they weren't that reliable, leading to their early retirement. Available 1967.

MLW C630M - The C630M (and later M630) model was the first big diesel loco by MLW. Sold in Canada to CN, CP and BC Rail, these big diesels were seen until their retirement in the mid 1990's. Available 1967.

GMD SD40-2 - The SD40 is the predecessor to the very popular SD40-2. The SD40 and later SD40-2's are the most popular heavy road switcher in Canada. Liveries - CN (2 variants), CP (2), ONR (1). Available 1968.

MLW M636 - The M636 was Montreal's version of AlCo's C636. The M636 was purchased in Canada by CN, CP and the Cartier Mining Railway. CPR had such bad luck with their M636's that aside from one M640 in 1971, they never purchased MLW again. Liveries - CNR, CPR, Cartier. Available 1970.

MLW M640 - The M640 was an experiment between CPRail and MLW. The lone M640, no. 4744, was built on the end of CPR's last order of M636's. In later years, the M640 was used as a test bed for AC Traction, one of the first locomotives to be so equipped. It's preserved at the Canadian Railway Museum in Delson, Quebec. Available 1971 [not available yet].

GMD GP40-2 - Canadian National was the only purchaser of the GP40/GP40-2 in Canada. Available in both wide cab and standard cab versions. A GO Transit livery is included. Available 1974.

MLW/BBD M420W - The MLW M420W was the first locomotive built with the now common 'Wide Nose' cab. The M420W was a reliable locomotive, and many still live on on short lines all over North America. Livery - CNR Available 1976 [not available yet].

GMD GP38-2 - Canadian National and Canadian Pacific both purchased the GP38-2, although only CN purchased the wide cab version. Many of these locomotives still remain on both rail road's rosters. Liveries - CNR, CPR, ONR Available 1980.

BBD 'LRC' - VIA Rail was created as a subsidiary of CN in 1976. In 1978 it became its own entity. Searching for a new train to capture the imagination of the public, VIA went to Bombardier, the successor to the Montreal Locomotive Works. The result was the 'LRC' - Light, Rapid, Comfortable. The LRC units lasted until the GE P42DC's arrived in 2001. They were the last mainline passenger ALCo-powered engines in North America. Available 1980.

BBD HR616 - Bombardier and CNR developed the full cowl car body on the HR616 (High Reliability, 6 axles, 16 cylinders). The car body on these units (and all full-cowl Canadian units) is called the 'Draper Taper'. The car body is slightly angled behind the cab to give better visibility. Available 1982.

DIESEL LOCOMOTIVES [continued]

Werkspoor RAm TEE - These trains were built by Werkspoor in the Netherlands (locomotive) and SIG in Switzerland (coaches) for the Swiss Federal Railways (SBB) in the late 1950's. They operated on varies routes within Europe, between Zürich, Amsterdam and Paris as Trans Europe Express (TEE). In 1976, the trains were sold to Ontario Northland (ONR), who deployed them as 'Northlander' TEE on the Timmins-Toronto route. Due to maintenance problems, the engine heads were replaced with FP-7A engines in 1980. Available as 4-car DMU in 1976 (1980 with FP7 engine).

MLW RS18M - Canadian Pacific began rebuilding its RS18's in 1980 and completed in 1989. The result was the RS18u. These units were used on branch line and yard service until all MLW units were retired from in 1999. Livery - CP. Available 1984 [not available yet].

GMD GP9u - Both Canadian National and Canadian began rebuilding their GP7's and GP9's in the early 1980's. By 1993, there wasn't a high-nosed Geep left on either road. These units can literally be found all over both systems in yard service, local service and sometimes even mainline service. Liveries - CN and CP. Available 1986 [not available yet].

GMD F40PH-2 - Amtrak originally received the F40 in the 1970's. They didn't arrive on VIA Rail until 1987, when the second-hand FPA4's and most of the FP9's were retired. Paint schemes available is VIA Rail. Available 1987.

GMD/EMD SD60 - Canadian National purchased a number of 'full car body' SD50 and SD60's from GMD in the mid 1980's. SD60's were also delivered to CPR's subsidary SOO Line. Liveries available will be CNR 'SD60F' and SOO Standard cab. Available 1986.

GP40TC - Available 1966/1973.

GMD F59PH - GO Transit, looking to replace it's earlier GP units, and not finding the 6 F40PH's they purchased up to the task, they ordered the F59PH from GMD in 1988. Externally similar to an F40, these units had a separate engine driving the power unit. They're a popular commuter engine used all over North America. Liveries - GO Transit (F59PH), West Coast Express (F59PHi) Available 1988.

GE C40-8M - General Electric never really got a toehold in Canada until the 1990's. Aside from a few 44 Ton and 70 Ton models on CNR, Canadian roads never embraced GE. Main reasoning for this was all units sold in Canada had to have a certain percentage of Canadian parts. CN worked around this by having their C40-8M's (full car body) assembled at Bombardier's old plant in Montreal. Available 1990 [not available yet].

GMD SD75I - Canadian National needed new power to replace its ageing M630 and M636's. They purchased 26 SD70I units from GMD in 1995. 170+ similar (300HP more) SD75I units followed between 1996 and 1999. Available 1995.

GE P42DC - VIA Rail was needing new motive power in 2001 to replace its ageing LRC units. They turned to General Electric for new power in the form of the P42DC. Available 2001.

GE C44-9W - General Electric finally surpassed GMD in Canada in the late 1990's. CN purchased the DC version of GEs 4,400HP unit, the C44-9W in 1996-98 while CP opted for the higher tractive effort of the AC unit. Available 1997 in CN livery.

GE AC4400CW - General Electric finally surpassed GMD in Canada in the late 1990's. Canadian Pacific, who had never owned a GE diesel finally in 1998 placed an order for 81 AC4400CW's. CP now rosters nearly 400. Available 1997 in CP Rail livery.

GM SD90MAC - General Motors answered GE's AC4400 and AC6000 series with the SD90MAC. The SD90's were originally built with 4300HP and can be upgraded to 6000. Only CP currently rosters the SD90MAC. Available 1999 [not available yet].

DIESEL LOCOMOTIVES [continued]

GE ES44DC/AC - GE's 'Evolution' Series is the successor to the Dash 9. Intended to be both cleaner burning and cheaper to run, these units are the top of GE's line. CN opted for the DC version, CP for the AC version. Available 2005.

Bombardier 'Jet Train' - Bombardier unveiled the 'Jet Train' a couple years back for high speed rail service in the US and Canada. No sales have been made yet, but it's very possible VIA Rail may invest in a few in the future. That said, the Jet Train will be in a variant on the VIA 'Renaissance' scheme. Available 2004 [not available yet].

Note : not all available liveries have been shown; some engine may have more liveries available or liveries are climate dependent.

Narrow Gauge – Rolling Stock

By 1920, the only narrow gauge in Canada was the White Pass and Yukon Railway in the West and the Newfoundland Railway in the East. The Newfoundland Railway was taken over by Canadian National in 1949 when the province joined Confederation and was abandoned 40 years later. The White Pass was built during the gold rush in the Klondike and lasted hauling freight until 1982 when the mining industry collapsed. It was rejuvenated in 1988 as a seasonal tourist line. It currently runs over 40 miles of the original 110 mile route.

4-6-0 'Ten Wheeler' – Available 1910 (1920).

4-6-2 'Pacific' - The Newfoundland Railway had a number of small Pacific's built for them by Baldwin in 1920. No. 593 (ex NR 193) is the sole survivor. Available 1915 (1920).

2-8-2 'Mikado' - For freight service, the Newfoundland Railway had a number of Mikado's, also built by Baldwin. These were also used on the White Pass & Yukon railway. Available 1915 (1920).

GMD NF 210 - When CNR was looking to 'dieselise' the 42" gauge Newfoundland Railway, they turned to General Motors. 9 'NF110's' were built between 1952-1953 and 38 'NF210's' were built from 1956-1960. Also called "Mutant Geeps", these locos, along with the G8's killed steam on the island. Available 1954.

GMD G8 - The G8 was originally intended for export service, and was considerably smaller than the NF110/210's. Nevertheless, 6 G8's found their way to Newfoundland and lasted until 1988. CN also had 5 standard gauge units. Available 1956.

GE 'Shovelnose' - Looking for something to replace their steam locomotives, the White Pass & Yukon Route ordered a number of 'Shovelnose' 50Ton diesels from General Electric. In both green and yellow and the later blue, these units were VERY distinctive. White Pass & Yukon. Available – 1950 in 3 liveries.

Alco/MLW RSD35W - The White Pass & Yukon ordered four RSD35W (Wide-nosed) units in 1982. Shortly before they were to be delivered however, the WP&Y ended operations, so the units were stored. Three (#111-113) were sold to US Gypsum for their operation at Plaster City, CA in 1993. No. 114 was finally delivered to the WP&Y in 1995 and is the last narrow gauge unit built for a North American railroad. The DL535E is included, available 1969.