

***THE NEILSON "BOX" TANK
0-4-0ST VARIANTS***



By 4th's Games



Introduction

Greetings! First off I'm going to say a massive thank you to whoever may be reading this, as I would assume that you used your hard earned earnings to pay for this Train Simulator Classic DLC. This is my first DLC out, after a very long time in the making with a lot of frustrations along the way (so many). However I think it's amounted to something very special and indeed something very different to what the game usually sees come out.

Early, weird and whimsical is my bread and butter when it generally comes to rail history so these odd Box Tanks seem the correct fit for the type of stuff I'd love to add to the game at some point. I've always loved their appearance since I was small, only ever really seeing a single photo of one that often gets shared around a lot in certain circles. Over the years I've researched, modelled, developed, and modelled again from scratch these Box fellows to get the best of their history depicted.

Developing for TS is no easy feat, the game is old at this point and requires a lot of patience to tune assets just right so they don't crash every six minutes (This happens a lot). Developers have my admiration even more than before when I started this journey back in 2017. Over that time I've met a lot of people who I'd call my greatest friends now, who have helped get this piece of DLC where it is today. So without further a-do. I present to you, the Neilson "Box" Tank!

Contents

<i>Page 1</i>	Title Page
<i>Page 2</i>	Introduction and Contents
<i>Page 3</i>	A Brief History
<i>Page 4</i>	Continued...
<i>Page 5</i>	What's Included - Locomotives
<i>Page 6</i>	Continued...
<i>Page 7</i>	Continued...
<i>Page 8</i>	Continued...
<i>Page 9</i>	What's Included - Rolling Stock
<i>Page 10</i>	Continued...
<i>Page 11</i>	Controls and Features
<i>Page 12</i>	Acknowledgments
<i>Page 13</i>	The Future
<i>Page 14</i>	Terms and Conditions

A Brief Muddled History (Or sort of)

In the year of 1850 or something, Glasgow created what shall be known as the “Box”. The End.

No seriously though the amount of history I could tell for one of these locomotives alone would probably barely fill the page. But I’ll do my best to do a general overview. There is actually a surprising amount of information out there for these Boxy fellows if you really dig deep enough, with the first of their members dating back to the 1850s thereabouts. The most recognizable one being that which worked the West Somerset Mineral Railway, which photograph of Number 370 atop of the incline has been shared around the Internet for many years and no doubt is many peoples first taste of what a Box tank truly is. So, where do we start?

Neilson’s and Company of Glasgow is no stranger to railway building practices, having existed before that in the 1830s only building locomotives at the start of 1843. Some of their more unknown built locos include the Caley Single 123, Taff Vale 02, the Great Eastern 209 (we’ll get back to that one), various types of mineral locomotives and many more overseas railways such as ones in New Zealand and Argentina; and that’s only preserved examples! The Boxes then, by comparison seemed to be a more standard type of mineral loco produced. A sort of, homemade special for those railways that need something built. If your company is stuck in a rut, with no transportation in sight to deliver the menial tasks of building materials; then get yourself a handy dandy Box tank! New from Neilsons. Are they powerful? No not really, but they look cool. Are they great for carrying a plentiful load of cargo on long distances? Well, no actually. The great Ian Rice once described them as “Simple, almost crude in their design and manufacture, devoid of any concessions to aesthetic. ‘Boxes’ could be found laboring on industrial, mining and light railways from the Highlands to Cornwall”. They are known for their distinction boxy saddle tank, which tends to either be just before the smokebox or more commonly after, covering it over entirely which is seemed to be on most examples built. Generally all of them sort of followed the same pattern in valve design of butterflies and appearance, however some deviated from it, which either seem to be a rebuild of sorts by the buying railway or a variant for the sake of being one. No Box is alike, but similar enough to get confused at when compiling a list of what to include and what not to include for this DLC. Many to begin with were fitted with Gab Gear, but later ones tended to opt to have conventional Stephenson’s instead. A lot of Boxes were fitted cross-head pumps to inject water into the boilers, while others often had more typical examples of a standard water injector. A very hodge podge of parts and bits for an overall effective little shunter.

As mentioned previously, the West Somerset Mineral Railway had several Boxes to it’s name, which overall were all more refined than their counterparts elsewhere. The railway was built to carry iron ore from the mines at Brendon Hills down to Watchet Harbour. A single engine of standard design were purchased in 1856 to aid with construction of the line. However it did not last long, injuring the fireman when the fire was lit without there being any water in the boiler rendering the locomotive useless til repair. Another Box was purchased the year after while the first was sent off for repairs back at Neilsons. Both these engines then suffered a collision the same year, with one being presumably cut up and the other left for scrap. Another Neilson was brought in when passenger traffic took off in 1865, being on the upper part of the incline the railway processed. The fourth and final Box on the route was a temporary replacement from the Ebbw Vale Company in 1895 named “Newport”. The Ebbw Vale Company being a neighboring asset to the West Somerset, themselves owning six box tanks purchased in 1855. It seems a lot of them were rebuilt from photos and archives remaining.

The Redruth and Chasewater Railway was a line opened in 1825 as a horse drawn tramway to transport copper from mines deep in the Cornwall valley. It was constructed to 4ft, eventually gaining steam locomotives later on in 1854. These engines were two stock standard Neilson's, named Miner and Smelter respectively. Soon enough in 1859 they were joined by a third, this time built to a 0-6-0ST named "Spitfire" after the other two were rather knackered. With the line being only nine miles long, only serving colliery traffic it makes sense that the Boxes would seem quite at home on the line. The two originals were a standard looking Box upon arriving, but soon fitted with an extra pair of trailing wheels for stability reasons. "Miner" was also eventually to rebuilt into an 0-6-0, similar in appearance to "Spitfire".

The Findhorn Railway which eventually was emerged into the Highland Railway only had a single Box to its name, which boar gab gear. The Caledonian Railway had one of some point which was eventually rebuilt. Each one could have had different wheel patterns, ever so slightly modified from the last. It seemed as if some had ash pans to start with while others might have not. Some sometimes had big girth thick chimneys whilst others opted to have long and thin ones. Every time you'd look at a photo of one, whether newly discovered or existing since forever a new detail or idea is always found on them, least from my experience.

At some point in time, it seems like the Box was being phased out in favor of a similar design. Piano tanks are also a saddle tank design, in which the water tank is very reminiscent of a piano in the way it slopes down at the corners (sometimes called an Ogee due to the shape in the community). It seems like Barclay also had this addition at some point, as far back in the 1860s (while Boxes were still being built for twenty more years mind you) piano's started to be made. Now they weren't quite the 209s yet, of which we mentioned earlier. More semi precursors to them, but often get bundled together when talking about them in groups. Eventually this did lead way to the 209s, or rather Neilson 12-Inch Mineral tank as they're referred to on books, which then became the basis of the Great Eastern Railway 209 Class of locomotives as they began building ones themselves in batches.

While the Boxes have a relatively short history, they have very much cemented themselves in the legacy of long standing mineral railways that ran up and down all over the place around the UK and even overseas. The amount of people I've seen, myself included, who have wanted to build one for a model railway of some sort just because of the quirky appearance has to be commendable in its own right, as no other weird out of history loco has seen as much love as this odd footnote in history. Maybe little engines can do big things after all...



What's Included?

Deciding what to include is a bit more tricky than what people might expect. Originally when I grabbed my postage notes to jot down any and all ideas for how I'd make DLC personally, I would include as many things as I could as I believed the masses enjoyed variety. And whilst this is true to some degree, it's quite hard to really grasp a sense of what's worth including and what isn't when the clock has been ticking on the development cycle for a good year.

This pack is comprised as an "interpretation" of the Box Tanks history, as with many contractor type locos there isn't really a set appearance that you can just say is the definitive one. Yes, they all have the same outlined design, very clearly but they all have a small distinctive features to them. For this, I have designed the model to be module. Meaning, they all share the same chassis and components to maximize variety suited to individual railway needs. I feel this was the best way to do it, otherwise development would have taken longer. This allows more customizable attributes for user intent given this is a game made for enjoyment we're developing for.

SO, here is the list of Boxes which are included within the pack, and their livery alternatives:

The Locomotives



West Somerset Type

Several examples of this type ran on the West Somerset Mineral Railway which is where that photo I mentioned earlier is from. This particular one having an angled water injector setup, assuming for when working atop the inclines of Somerset.

This lovely loco comes in delightful liveries such as:

Neilson Green (With + Without Lining)
Maroon - Plain Black - LBSCR Umber



Ebbw Vale Type

Different chimney, buffers for extra colliery work and some lush new safety valves. This type was based on the Box found at Ebbw Vale named "Gen. Williams". As said it's angled buffers allow the movement of more block based colliery wagons to be transported with ease without the fear of buffer locking. These wonderful locos come in delightful liveries such as:

Neilson Green (With + Without Lining)
Highland Yellow - Fletcher Red - Plain Black



Ogee Type

The final style of generic Box design to be in this pack. Here we have an Ogee, which is basically a precursor to the later types of piano tanks. It is currently unknown where these ones ran entirely, but “Gen. Williams” hosted a similar rebuild in its later life. This appropriate loco comes in the delightful liveries such as:

*Neilson Green (With + Without Lining)
Plain Black - Metro Red - S&DJR Blue*



Dutch Box - Short Tanks

Yes, many Boxes did go overseas for the longest time, ending up in all sorts of places. Two Boxes were sent to the Netherlands, built for the construction of the Noordzeekanaal. This particular loco having the Number 929 with the water tank not reaching over the smokebox. While it's unsure what livery these things wore, included with in is:

Dutch Green - Lined Black - NCS Yellow



Dutch Box - Long Tanks

The other Dutch Box is Number 593, with a standard water tank reaching over the smokebox. There's not an awful lot of photos available for both these locos, two being of this one specifically. Once again while livery options are unsure, what is included is:

Dutch Green - Lined Black - NCS Yellow



Rebuilt Box A

As previously mentioned, one box from Ebbw Vale ended up on loan to the West Somerset. This being “Newport”, heavily rebuilt which is what this one takes inspiration from as it seems quite a few boxes were in life. Liveries graciously include:

*Maroon - Green
Plain S&DJR Blue - Plain Black*



Rebuilt Box B

Another Ebbw Vale Box. The only real difference being the running board and cab plate. Liveries surprisingly include:

Maroon – Green

Plain S&DJR Blue - Plain Black



Early Piano - Short Tanks

While not technically a Box, the 209 12inch Mineral tanks were an evolution of sorts. This is what I'm calling the step in-between, as they aren't really the 209 types but host a lot of similar features, namely flush buffer beams with the running board. This long tank form comes in:

Neilson Green (With + Without Lining)

Lined Black - Works Grey

Red with Yellow Lining



Early Piano - Long Tanks

This delightful chap is another in-between type one before the 209 12 inch mineral. Photos exist of both with the tanks covering the smokebox. Within it comes the liveries of:

Neilson Green (With + Without Lining)

Lined Black - Works Grey

Red with Yellow Lining



Canadian Box A

More overseas Boxes, this time being "Pinkie". This one has been massively rebuilt several times over its life to fit company needs, eventually ending up at the Sydney and Louisburg Railway. Going from no cab, to this wooden shambles, a shiny new bell and buckeye coupling. While the livery is uncertain, what is included is:

S&L Railway Black (with + without decals)

Denver and Rio Purple - Olive Green



Canadian Box B

“Pinkie” once again, with a new polished cab akin to older 4-4-0 American types.

Personally I prefer this cab over the last one, more refined. It’s weirdly grown on me, becoming a favourite out the bunch.

The liveries on this one once again include:

S&L Railway Black (with + without decals)

Denver and Rio Purple - Olive Green

All locomotives on this list have existed at some point in history. While some are a “best guess” based on very limited information, each one has been made knowing that they’ve appeared on a photograph at least once in their lives.



Rolling Stock



West Somerset Inspired Brake Coach

This coach has been inspired by the brake coach with first and third class compartments that ran on the West Somerset Mineral Railway. Liveries include: *Brown, Cambrian Green and Furness Blue.*



West Somerset Inspired Composite Coach

Another coach inspired by the one above, but with a different configuration in compartments. Liveries include: *Brown, Cambrian Green and Furness Blue.*



1850 Brown Marshall Coach

Many mineral railways didn't really run passenger services, and a lot of the time when they did it was with a bunch of second hand coaches from decades prior. This coach is a representation of that. Liveries include: *Brown, Cambrian Green and Furness Blue.*



West Somerset Two-Plank - Front Open

Inspired by the wagons used on the West Somerset Mineral Railway, all of your contractor railways will be complete with these new and improved Two-Plankers.



West Somerset Two-Plank - Side Open

Another of the same type, but this time with a side hatch instead of the front one! All around the same thing but at a great price.



West Somerset Two-Plank - Side Open

Another of the same type, but this time with a side hatch instead of the front one! All around the same thing but at a great price.



West Somerset Inspired Three-Plank

A bit of fiction for your buck, this being the exclusive Three-Plank wagon, it has an extra plank! Corr!



West Somerset Inspired Flat Wagon

Want to take some wood or crates on a journey a far? Are you fed up of always using conventional dumb plank wagons to do the job of a flat one? Well now you can at only select retailers near you, it's a Flat wagon!



Seaham Harbour Inspired Box Van

This delightful van will be able to carry all sorts of things to deliver to the starving towns of 1860!



Bodmin and Wadebright Inspired Brakevan

If those no air braked trains are too much to handle, then this pesky brakevan will be able to halt anything in its stead. Disclaimer, it won't be able to hold everything in its stead.

Each wagon comes with two liveries; a greyish type one and then a red oxide like one. Originally when I wrote up the plan for what to include I didn't really consider wagons. Upon reflection I decided to include wagons that are inspired by the West Somerset lot, as that tends to be the most common depiction the Box Tank has sometimes. All wagons (bar Flatbed, Box van and Brakevan) are able to load up on coal and stone/lead. Coaches, Flatbed and Brakevan also come with additional camera options.

Controls and Features

Apart from that variety of liveries and parts, what exactly can you do with this “Box” Tank?

Regulator	A and D
Reverser Lock	E (Hold)
Reverser Lever	W and S
Handbrake	/ and Shift /
Cylinder Cocks	C (Toggle)
Firebox Door	F (Toggle)
Stoking	Linked to Firebox Door position
Injector	O (Toggle)
Injector Water Feed	L and Shift L
Whistle	Space
Whistle Quill	Mouse (Cab Control)
Builders Plate (On select Boxes)	Scroll through Ctrl 1 and Ctrl 2
Bell (Canadian A and B only)	B (Toggle)
Lamp (Canadian A and B only)	H (Toggle)
Legacy Driving	Ctrl A (Toggle)
Camera Control (Locomotives and Rolling Stock)	Arrow Keys Right and Left

Operating the Box Tank

As said in the history section, most of the Box tanks were of very low pressure standards and not awfully powerful either. Trying to balance out the enjoyment of playing with such a bizarre locomotive but also keeping it a challenge was in itself a challenge. There is a sweet spot, when firing the loco that must be kept for keeping pressure up. Put too much coal onto the fire mass then the fire will be smothered. Keeping the regulator open too long and not letting it casually coast will drain pressure like a mad man. So the way to drive this thing, is a massive balancing act. The IBs/coal amount in the firebox should really be between 55% and 60% (120 IBs) otherwise the fire will be smothered should it go over. Keeping the reg open at about 5% should also allow drafting to get into the firebox given there is no blower. They're a bit of a struggle to get just right (especially up hill, so be warned), but it's rewarding when it is so be careful what route you play with them on!

Builders Plates

The Box features the additional a toggle of builders plates on several variants. Two types, one being an early sort and another being that of a late plate. Within the game itself, by pressing Ctrl 1 or 2 it will scroll through the plates or if you want no plates at all that is also an option.

Hopefully this adds a small level of customization for some freelance running!

Acknowledgments

I don't even know where to begin with the thank you statements for the people I've worked with. So I won't, farewell! Only joking, here are all the people that deserve all the love they're about to get.

Jimmy of LARD

3D Modelling, Texture Artist, Rolling Stock Animations and Researcher

Yes I'm giving myself a credit because frankly the amount of pain I've endured in researching these things and putting up with the games constant crashing is worthy of one. I don't personally think I'm that good at the majority of stuff I put my mind to, but I hope there's things in there that'll give someone delight!

Dane of 4ths Games

Sound Engineering, Locomotive Animations and Blueprint Man

Without this man I would not be where I am right now. You think I'm the one who puts these funny little trains into the game? No, no; it's all this guy. I merely model, texture and design the model to work. But Dane here does a lot of the work and bloody splendidly might I add. His sound work is on another level for TS, knowing exactly the right kind of chuffs and puffs needed to make it all come together. I love ya' boo, never stop being who you are.

Other thank you include Steam Sound Supreme for even allowing me to publish this DLC in the first place! A thank you to Elias for massive assistance on wagon blueprints and for generally not getting angry at me for not knowing where a button is. A hearty massive thank you to Forerunner who helped with scripting assistance like the wizard she is when the game kept crashing and fixing various bugs with the Box in its development. A thank you to Yarran of Wayside Works, who translated a load of Dutch information on certain Boxes because I am a stupid English boy. A big ol' thank you to my testers as well, including: Owain, Top Hat, John, Connor, Jordan, Ben, Elias, Forerunner, Yarran and Matt.

Much of the information of the "Box" tanks can be found online, namely sourced from Ian Rice's articles in a multitude of model railway magazines of old, various books on the West Somerset and the R&C, and an assortment of different forum websites where likeminded folk have spread the love for the Box far and wide.



Final Thoughts and the Future...

Overall, I'm extremely happy with how this pack turned out. While it wasn't supposed to be the first, development on it took rapid movement in wanting to show these quickly little slices of goodness to world in the form of a digital railway simulator. But that's not quite it just yet...

While not apart of this pack, the screenshots gathered for it have been captured on a freeware route which is releasing soon, apply named the Selsbury Mineral Tramway. It's a short fictitious route, set around the 1850s to the 1870s that winds up to the high hills, of which coal collieries and lead mines lay ready to be transferred down to the dockyards. Do some shunting on the wagon turntables, or take a quick joint up to the top stations; you decide on Selsbury!

Those of you keeping up on the Phoenix Developments Facebook page may have noticed another project ongoing which I've been at the helm for even longer than this Box. That being the Liverpool and Manchester Railway stock. Where is that I hear you ask? Well, it's taking a lot longer than I originally thought it would, with people dropping in and out the project due to other commitments as the whole thing was a lot bigger originally. While the Box has had only two people working on it per say, the L&M packs have had a lot more work put into them that has seemingly need to be redone a few times, hence the delay in getting any kind of product out. Added to this is the unavailability of getting good sound recordings for such old locomotives in the UK, with currently only "Rocket" being the best source of sounds going forward currently. They are very much still being worked on in the background and I hope to get them to you in the future within 2024. Go follow 4th's Games if you want updates on that or if you just want to see what the others are up to with their own projects, give Phoenix Developments a follow!

So where does that leave us? While work on the 1830s stuff is going to be continued, I want to personally keep updating this pack with more variants and possibly more ideas. There is a number of Boxes that was going to be included, those being different gauges, controls and even a water pump version but lack of time meant they had to be cut. They could see another pack released in the future should this do okay, but also feel free to let us know if there is any specific liveries you'd like to see on a specific Box variant! The more the merrier to add to this pack in future as free updates.

Thank you so much for joining me on this journey, until next time.



The logo for '4th's Games' features the text '4 th's' in a purple, rounded, cursive font with a white outline, positioned above the word 'Games' in a blue, rounded, sans-serif font with a white outline. A horizontal purple line separates the two parts of the text. The entire logo is set against a bright green, glowing, triangular background that tapers to a point on the right.

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