THE WHISTLE

The official publication of:
THE BRITISH COLUMBIA SOCIETY OF MODEL ENGINEERS (BCSME)
Operators of BURNABY CENTRAL RAILWAY Vol 56; Issue 3 – May/June 2026

Season 2026 Opening

Photograph courtesy of Brian Ruebottom

BCSME Member Meetings

General Meeting on May 6th & June 3rd
In-person and on Zoom 7pm

In This Issue

BCSME Address & Track Site

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Editor of The Whistle

Brian Ruebottom
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Submissions & Deadline

The editor's role is to assemble and publish the newsletter, but the newsletter truly serves as a platform for members to share their BCSME stories with one another. Your contributions make The Whistle vibrant and meaningful.

If a BCSME member has any articles or photos that they'd like to submit for publication, please send them to the editor as an attachment in an e-mail.

Please add the words "The Whistle" in the e-mail's subject line. The more submissions made by members of the Society the better this newsletter will be.

The deadline for any submissions is one week prior to an issue being published. New issues are published every second month, starting at the beginning of January.

Means of Publication

I use Apache's OpenOffice suite on a PC to create this newsletter. OpenOffice can open almost any Microsoft document file.

Photos are handled using GIMP. Any digital pictures being submitted for publication should be in as high a resolution .jpeg format as possible. 200 DPI is a good value.

The BCSME Directors

President .....Peter Berry
Vice-president.....More McCormack
Secretary.....Tom Carr
Treasurer.....Brian Carlson
Business Director.....Gord Tilley
Site Director.....Matthew Berry
Operations Director.....Bruce Wilson
Shop Director.....Chuck Laws
Communications Director .....Marie Rogers

Officers

Financial Review.....Bill McKenzie
Privacy.....Bill McKenzie
Security Access.....More McCormack and Dennis Bosa
Garden Railway Project Manager.....Dennis Bosa
Boiler Inspector.....Steve Harvey
Archivist.....**Vacant Position**
Librarian.....**Vacant Position**
The Whistle Editor.....Brian Ruebottom
Comm. Chair, Garden Railway.....Brian Ruebottom
Comm. Chair, Raised Track.....Doug Bach
Trainers/Examiners.....Doug Bach and Bruce Wilson
Steam Instructor.....John Ostler
Shop Frm.....Bruce Johnston (M) and Phil MacGregor (C)
Social Media Manager.....John Roberts
New Steam Loc. Project Mgr.....Chuck Laws
Comm. Chair, 100th Ann...Tom Carr and Kent Cavaghan

CALENDAR OF EVENTS

Also check: www.bcsme.org

2026 Play Day Calendar
From 3:00 PM to Dusk
Friday - May 15th
Friday – June 19th
Monday – July 6th
Friday - July 24th
Monday - August 10th
Friday – August 28th
Friday - September 18th

Visiting Clubs at the Station
May: Top Link NettleWood, and in June: Lego Club

Chilliwack Heritage Park
Train & Hobby Show – Oct 24th and 25th

Contact for BCSME Concession and Bookings

Gord Tilley: concession@bcsme.org / **Bruce Wilson:** bookings@bcsme.org

President's Message

Our 2026 season opened on Good Friday, April 3rd, and the momentum hasn't stopped. It was an honour to officially open the park alongside Burnaby Mayor Mike Hurley and several City Councillors. I would also like to extend a special thank you to the Burnaby Fire Department; their assistance in helping passengers board our trains safely was invaluable and much appreciated by our guests.

The community response has been nothing short of spectacular. We had a busy opening weekend, and the weekends following have seen us running at maximum capacity. This represents a landmark start to our season and a testament to the hard work everyone has put into the park. With this high level of ridership, our need for volunteer help is growing. We are actively seeking new members and volunteers to help us maintain this success. If you know someone with a passion for the rails or community service, please encourage them to reach out.

Behind the scenes, we are already looking toward the future. Several projects are in the preliminary planning stage, while others are already in the design stage. I look forward to sharing the specific details of these developments with you in the coming weeks.

Thank you for a wonderful start to 2026!

Happy Steaming, Peter Berry, President, BCSME

Editor's Message

Shane Carr was interviewed by Global News while at his Nanaimo, BC, machine shop. The BCSME bought his red CPR 8513, a 7 1/2 inch Diesel-electric locomotive. The locomotive is now on site at the BCSME.
This is BC: Vancouver Island man builds replica locomotives | Watch News Videos Online

Temporary Male and Female washrooms have been setup east of the station. An electrical box was installed prior to the season start and the washrooms are now available for the public use on the weekends.

All of the Societie's 7 1/2 steam locomotives passed this years boiler test. The 3 1/2 Hudson failed the boiler test. The shop is working on a cost to repair the locomotive. Photograph courtesy of Chuck Laws

In this issue Ernie Stepney has written part 2 of his Selkirk build. Reading his part 1 inspired me to research and write an article on the Selkirk type locomotive. This issue is the informal 'Selkirk' issue.

Brian Ruebottom
Editor, The Whistle

JOB JAR

Item 1: Bruce has many small jobs in Operations. Please contact him at bookings@bcsme.org

Item 2: The Track Gang - if you can help, please contact More McCormack at vicepresident@bcsme.org

Item 3: The Garden team is in critical need of help on Tuesdays and weekends. Please contact Catherine at 604-420-1778

Reminder: For members who frequent the park – please walk the tracks when you arrive at the park and help with keeping the tracks free of debris.

Model Train Donations to the BSCME

The British Columbia Society of Model Engineers (BCSME) has assisted families and estates in finding new homes for model train collections for many years.

However, due to the increased demand on our volunteers to operate the railway and manage rising ridership, the Society will no longer handle the sale or disposal of model train collections and books. We remain happy to provide a list of suggested alternatives, such as museums and auction houses.

Please contact the Society before bringing any items to the Station Building.

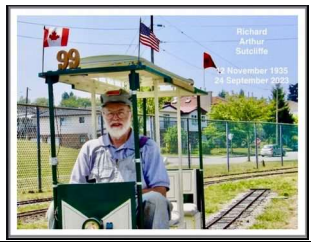
Peter Berry,
President, BCSME

On Behalf of the Sutcliffe Family,

I would like to send a heartfelt Thank you to the BCSME Members and Board of Directors for all the help and support they offered our family after the passing of Richard (Dick) Sutcliffe.

Without the knowledge, experience and hard work of all the members that came out to help dismantle, sort, and catalogue Dad's collection, not to mention what members bought for themselves, I don't know how we would ever have managed to get the collection to the proper homes where the pieces now reside.

I want to send a special thank you to Dennis, Ken, and Brian for organizing the work parties and cataloguing of the collection. To all the members that took part in helping, thank you for manning the sales tables, helping with the dismantling the layout, and treasure hunting in Dads train room.



Sincerely yours,
Cameron Sutcliffe

BCSME

2026 Play Day Calendar

1. **There must be a designated Track Manager for all Play Days**
2. **Society owned 7.5" equipment may only be used for training purposes on Play Days**
3. **NO society owned 7.5" equipment is to be run on Play Days adjoining long weekends**

General Rules

- Members and family of the BCSME, the CTTA and the GVGRC are invited to attend
- CTTA and GVGRC members are asked to wear their club's name badges
- There will be no food service provided unless otherwise announced in advance
- Attendees are encouraged to bring their own picnic supper
- The society BBQ will be available for those wishing to use it
- Picnic tables will be available, and attendees are welcome to bring their own lawn chairs
- The 7.5" and Garden Railway will be in operation
- All attendees are encouraged to bring their own trains to run

The shop will not be open on Play Days unless repairs are required on equipment. Socializing inside shop walls is discouraged as it is disruptive and potentially very dangerous.

Respectfully submitted;

Tom Carr
BCSME Secretary

Easter Long Weekend
By Brian Ruebottom

We had a great start to the 2026 season opening for the Easter long weekend. There was no rain to worry about, although on Friday the sun stayed hidden behind the clouds. The sun did come out for the next three days, bringing out strong public attendance for train rides. We were not overwhelmed by visitors this year, but the number of riders was still strong enough to keep us busy. This might be due to the number of volunteers who came out for to volunteer that weekend.

Burnaby Mayor Mike Hurley, several Burnaby Councillors, and members of the Burnaby Fire Department joined us to help open the 2026 season. The BCSME held its annual Easter dinner that Saturday night, and both Brendan and I received our 2025 "Volunteer of the Year" plaques.

On Sunday, Jayden and More McCormack double-headed a six-ride-a-stride train with Ken Lear conducting for the day. I've seen them double-head live steam before, but never for the public. Watching it in full operation was especially interesting for me.

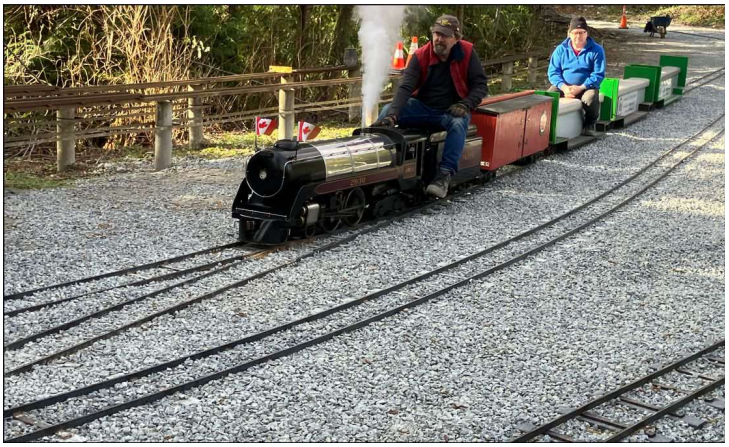
Above photographs courtesy of Tom Carr

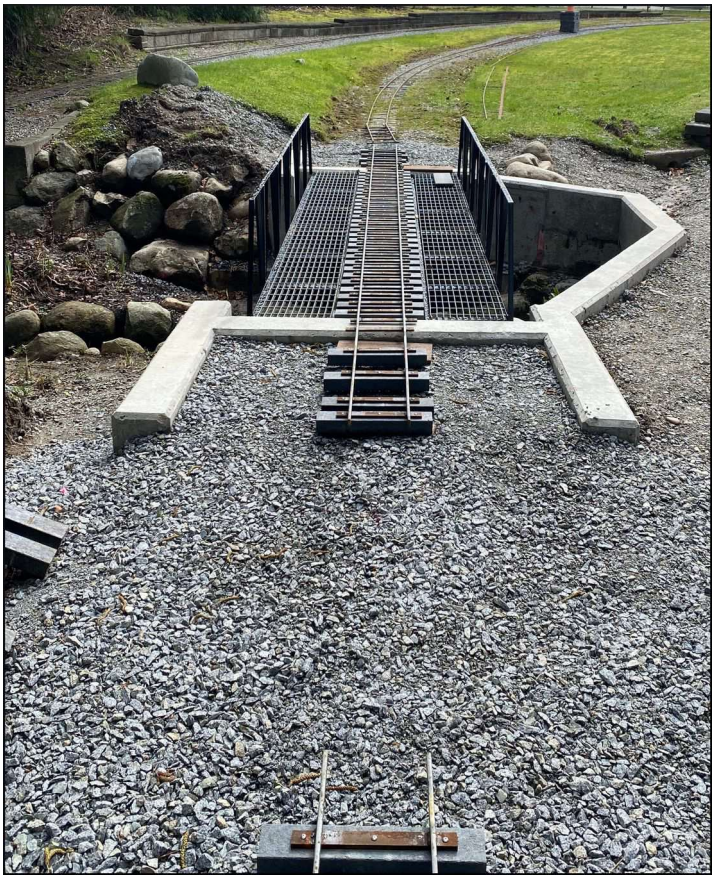
Bottom photograph courtesy of Brian Ruebottom

East Junction and Hargrove Bridge Update

The East Junction track work was completed the weekend prior to the Easter Long Weekend. This included installing the Hargrove Bridge; however, the bridge was not ready for our 2026 season opening weekend.

The East Junction photographs are courtesy of More McCormack and the Hargrove Bridge pictures are courtesy of Brian Ruebottom.





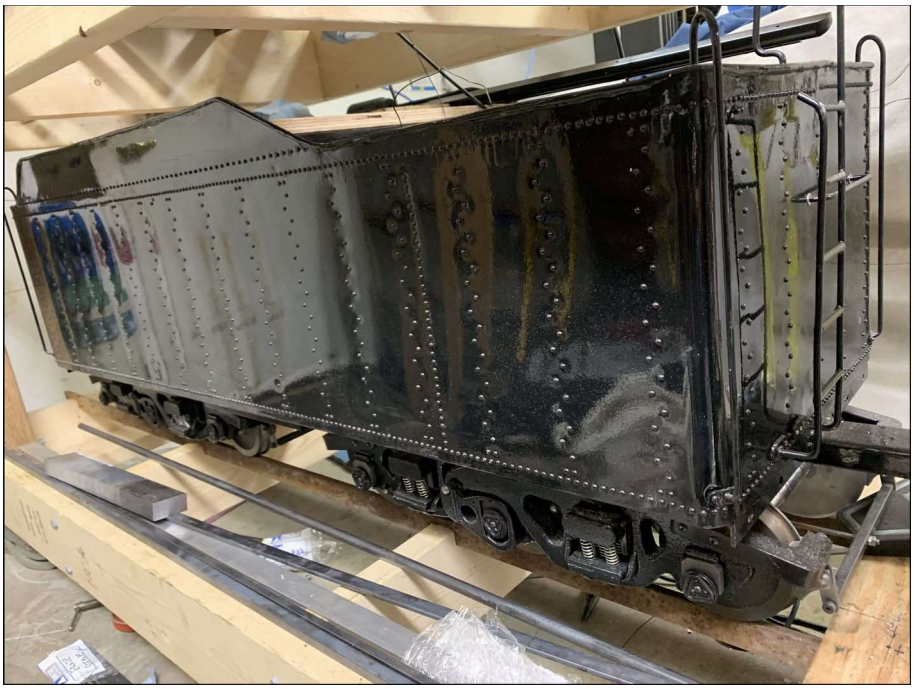
The Selkirk Saga (Part 2)
By Ernie Stepney

Since my last story the "Project" has become more of a series of small steps punctuated with giant leaps forward. As I mentioned the plan was to start by building the tender. As I had no drawings for a Selkirk tender I found a bunch of really good pictures of a brass HO scale tender which was purported to be modelled from a Selkirk tender.

Work was started by building a tubing and angle iron space frame and covering it with 18 gauge steel sheet. By the time this was finished I had installed two thousand three hundred rivets. The lengths I will go to for authenticity! After building the very Art Deco front and rear bumpers I found out that the tender which I had used for my prototype was actually a Texas and Pacific tender, way prettier than a CP tender but not correct. A back story was needed to avoid building another tender, here it is and I'm sticking to it!

> 'In 1944 the tender for CPR Selkirk 5900 was damaged beyond repair and due to wartime metal shortages it was decided that the purchase of a used tender from Texas and Pacific Railroad would be made. That is why the tender does not look like a CP tender.' That's my story and like I said: "I'm sticking to it".

The next job was machining the frames for the Buckeye 3 axle tender trucks. I had ordered the castings from Allen Models and picked them up in Point Roberts. When I started sorting the parts I had a problem, several major casting were missing, had I misplaced them in the shop or were they short shipped. Much back and forth with the supplier and I finally had to tell him to weigh all the castings that he should have shipped and compare it with the waybills, yep! 70 pounds of cast iron missing. $100 dollars extra shipping but at least I had them all.



The Buckeye trucks were used on the T1b Selkirk's and the T&P Texas class tenders. These are 3 axle fully equalized units. The axle spacing is really tight so it required making up cable operated brake actuators instead of the spot on truck units which we use on our ride-a-strides. The tender is ready to go except for the lettering and the water tank which will be custom made of polyethylene to prevent corrosion and leaks.

Bill DeGruchy of VIME had stick-built the frame, very rigid with dadoed joints, and machined the wheels. "All" that was left to do was to make the bearing boxes, machine the axles, quarter the drivers and set up everything so that all the axle spacings (remember there are 5 driven axles on this beast) were equal, about six months of work but the result was that with equal length dummy rods installed there was no binding at all. Chuck Laws suggested using Metric sized bearings as they are more widely available and usually less expensive than the imperial dimensioned units. The 20 driver axle bearings I installed have a static load capacity of 35 tons, I think that should be enough!

The locomotive suspension is equalized on all 8 axles but the front and rear truck frames were only partly cored for the lever passages, numerous broken end mills and ball point burrs and the channels for the equalizing linkage were finally opened up.

There are several hundred individual parts involved in the suspension and about the same number in the brake system, fortunately many of them are in the 20 or more of each category, kind of boring repetitive work but at least after prototyping one from the original prints the rest were easy. After several months of cutting, drilling and grinding it all fit together.

One departure from the prototype, my son Robert, you may remember him from the last instalment, had noticed that a lot of builders were not using real springs, just machined parts that look like leaf springs. The logic is that leaf springs do not scale down really well, they end up almost as stiff as the solid part. I figured that with equalized suspension I would try it and make real springs later if it didn't work out. Time will tell. The Selkirk was engineered to maneuver the tight radius curves of the mainline from Calgary to Revelstoke, to do this the front and rear driver axles float horizontally in the frame, I copied this on mine to hopefully help negotiate the tight radius curves on the BCSME mainline.

With the frame, suspension and brakes finished it was time to move on to the complicated stuff, machining the side rods, building cross heads and the super critical stuff like cylinders and valve motions. I will cover all that and more in part 3.

Photographs courtesy or Ernie Stepney

The Evolution of Locomotive Power: 2-10-4 Selkirk Type

Author: Brian Ruebottom

Locomotive designs evolve over generations with each variant building on the strengths of its predecessor. The 2-10-4 Selkirk steam locomotive is an excellent example of this process. It was designed at a time when steam-locomotive performance was shifting from 'rule-of-thumb craft' to a 'formal thermodynamics and adhesion science'. Over six decades, heavy drag locomotives like the 0-10-0 and 2-10-0 evolved into the 2-10-4 Texas type, which Canadian Pacific Railway (CPR) adapted into the Selkirk. Prior to the Selkirk, CPR relied on the 4-6-0 Ten Wheeler[1], 2-8-0 Consolidation[2], 2-10-2 Santa Fe type[3], and 2-8-2 Mikados[4] for pulling trains over the Rockies. While reliable, these locomotives often needed assistance to move heavy trains through mountainous terrain.

The Ten-Wheeler and Consolidation locomotives were late 1800s era steam locomotives that the CPR used throughout their operations. These locomotives proved inadequate for mountain service as train sizes grew. This forced the CPR to rely on helpers and this slowed operations across the Rockies. The Santa Fe type, P1 class, entered service shortly after 1910. However, these locomotives had a long rigid frame that was poorly suited for the tight curves in the Rockies, they tended to sway laterally at high speeds, and on steep grades they often needed a pusher or banking engines. The Mikados, P2 Class, entered service in 1919 and they were more versatile than the older CPR steam locomotives. However, they struggled with the tight curves and the steep grades of the Selkirk Mountains. By the 1920s, the CPR needed a locomotive capable of hauling massive freight trains over the Selkirk Mountains without double-heading and it had to be stable enough for pulling heavy passenger trains. Fortunately, the CPR did not have to build a new locomotive from the ground up. They found their answer in the Texas type steam locomotive.

In 1868 the 0-10-0T (tank engine) *Rueben Wells* was built by Jeffersonville, Madison & Indianapolis Railroad (JM&I) as a pusher for the 5.89% grade up Madison Hill, Indiana. The five-axle locomotive was the most powerful locomotive at the time[5] and its boiler pressure was 130 pounds per square inch (PSI). The Rueben Wells operated for 30 years on the JM&I line. A second locomotive, the *M.G. Bright*, was built a year after the Rueben Wells was completed. These locomotives were the first adhesion-based pushers, with no leading or trailing trucks, and they had an impressive tractive effort of 25,332 pounds-force (lbf). 20,000 lbf was considered high for the 1860s. Over the next five decades many 0-10-0s would be built throughout the world[6] and their factor of adhesion ranged from 4.5 to 5. Their popularity as a switcher or pusher was due to their high tractive effort and simplicity in design (no leading or trailing trucks).

The Rueben Wells follows a year after M. W. Baldwin & Co. (later Baldwin Locomotive Works – BLW) introduced the Consolidation. Burnham, Parry, Williams & Company (also BLW) introduced the 2-10-0 Decapods eighteen years later in 1886[7]. The Decapod represented a natural extension of the Consolidation design, adding a fifth driving axle to boost tractive effort while retaining stability. The leading truck on the Decapods improved the stability of the 0-10-0, and its design was focused on heavy freight service for steep grades and challenging terrain. Pennsylvania Railroad and Western Maryland Railway preferred the Decapods for their mountainous routes and drag freight services. These companies needed a locomotive for hauling slow heavy freight trains of coal, steel, industrial goods, and grain. The 0-10-0 and 2-10-0 locomotives became standard for the specific role of handling heavy-duty operations in mountainous terrain. It was a role that demanded locomotives be built for rugged, demanding conditions.

The Decapods were limited by having no trailing trucks. This meant that the firebox had to either be small or shallow in design, and thus limited the amount of steam in the boiler. To overcome the small firebox restrictions; Atchison, Topeka & Santa Fe Railway (AT&SF) designed the 2-10-2 Santa Fe type locomotive in 1903[8]. This locomotive had a larger firebox due to the addition of a trailing truck and the weight over the main drive wheels was balanced better. The larger firebox allowed for greater heat generation, thus supporting longer sustained

1 CPR D10-class Ten-Wheeler Masterclass - Rapido Trains Inc.
2 Canadian Pacific 2-8-0 N-2-a, b, and c - Wikipedia
3 Old Time Trains - Santa fe type
4 Old Time Trains - Mikado
5 loco-info.com - Jeffersonville, Madison & Indianapolis “Rueben Wells”
6 0-10-0 - Wikipedia
7 2-10-0 "Decapod" Locomotives: History, Specs, Survivors
8 2-10-2 "Santa Fe" Locomotives: History, Specs, Photos

operations. Additionally; the increase in boiler pressure, from 180 PSI in the Decapods to 200 PSI in the Santa Fe type, enhanced steam efficiency and power output. Early Decapods produced around 35,000 lbf, but later examples like Pennsylvania Railroad's (PRR) I1s reached over 70,000 lbf. The Santa Fe type established a typical tractive effort of about 75,000 lbf, with a factor of adhesion generally around 4.0. Over two thousand Santa Fe type locomotives were built for North American railroads, primarily for hauling heavy freight in mountainous terrain. Some railroads experimented with extreme designs like the 2-10-10-2 Mallet type, which doubled the driving axles to achieve enormous tractive effort. While powerful, these locomotives had limited success; CPR instead found its answer in the more balanced Texas type.

In 1919, the AT&SF made its final purchase of Santa Fe type locomotives from BLW, which included one experimental 2-10-4, No. 3829. This locomotive served as a test-bed for the 2-10-4 wheel arrangement and remained in service until 1955. In 1925, Lima Locomotive Works built 2-10-4s for the Texas & Pacific Railway (T&PR), and it was this order that gave the 2-10-4 its name the Texas type locomotive[1]. Lima adapted the 2-8-4 Berkshire by adding a fifth set of driving wheels, bringing the total to ten, and modified the cylinder dimensions from 26*32 inches (bore*stroke) to 29*30 inches. These changes increased tractive effort and helped reduce mechanical stress on the running gear. Tractive effort for the Texas type series ranged from 83,000 to over 100,000 lbf, making the design ideal for low-speed, high-torque freight service over moderate grades. The factor of adhesion for Texas type locomotives ranged from 4.0 to 4.5, reflecting how railroads adjusted the balance between traction and power over the 25-year production span of the Texas type.

The Texas type was manufactured by all of the major companies in the US; Baldwin, ALCo, and Lima, right up until the early 1950s. In 1929, Montreal Locomotive Works (MLW) built 2-10-4s for the CPR to operate in the Selkirk Mountains, and this is where the name Selkirk locomotive originates[2]. There were four classes of Selkirks: T-1a, T-1b, T-1c, and a single T-1d high-pressure locomotive. A total of thirty-six Selkirks were manufactured. The T-1b and c were semi-streamlined. The later Selkirk models operated at 285 psi, higher than their Texas-type counterparts. With a tractive effort of 78,000 lbf and a factor of adhesion between 3.95 and 4.01[3], they produced less raw power than the Texas type but compensated with higher boiler pressure and an optimized design that made them more effective in CPR's mountain service. This balance of efficiency, agility on tight curves, and reliable power on steep grades was precisely what CPR required in the Selkirk Mountains. Understanding this balance in locomotive design came at the right moment for the Selkirk design.

Locomotive pioneers of the early 1800's assembled boilers, cylinders, and running gear, but true locomotive design required understanding the relationships between the components. Cylinder capacity had to be matched to boiler capacity; steam demand had to be balanced against evaporation rate; weight on drivers had to be aligned with tractive effort. These were not intuitive principles but lessons learned through experimentation, experience, scientific studies, and sometimes failure. The Atchison, Topeka & Santa Fe's extended 2-10-10-2s illustrate this perfectly: the railroad lengthened the wheelbase and enlarged the cylinders without increasing boiler size, creating a locomotive whose steam demand exceeded its steam supply. Such examples show that locomotive evolution was not just a matter of scaling up parts, but of mastering the underlying engineering logic that made the machine function as a coherent whole.

A notable feature of the Selkirk was its low Factor of Adhesion. A Factor of Adhesion between four and five is considered ideal for steam locomotives. Values closer to four are preferred for heavy freight applications, where maximum tractive effort is needed without excessive wheel slippage. A value below four increases the risk of slipping, while a value above five indicates insufficient pulling power. Passenger locomotives, which prioritize smooth acceleration and speed over brute force, typically operate closer to five. The Selkirk's low Factor of Adhesion reflected a design focused on maximizing grip and pulling power for the steep mountain grades.

The Selkirk owed its success not merely to its size but to the balance between its cylinder demand and its boiler's ability to supply steam. Its two large 25×32 inch cylinders required a steady, high-volume flow of steam on long mountain grades, and the Selkirk's boiler was engineered to meet that demand[4]. A deep firebox, generous heating surface, high boiler pressure, and the use of superheaters and feedwater heaters allowed it to evaporate water at a rate that matched the cylinders' appetite even at sustained climbing speeds. This equilibrium between steam generation and steam consumption is what made the Selkirk a true mountain locomotive. It could deliver continuous power without starving its cylinders or losing pressure. The locomotive's performance was defined not

1 2-10-4 "Texas" Locomotives in the USA
2 Tender Locomotives 2-10-4 "Texas"
3 Canadian Pacific Selkirk locomotive - Wikipedia
4 Canadian Pacific Selkirk locomotive - Wikipedia

by its raw statistics, but by this underlying relationship between the boiler's capacity and the work its cylinders were asked to do.

The Selkirk overcame the problem of insufficient power for a steam locomotive in difficult mountainous terrain. It ran smoother at high speeds than its predecessors, and its design allowed for greater flexibility on tight mountainous curves. For CPR's mountain operations, the Selkirk came remarkably close to an ideal balance of power, efficiency, and reliability. Optimized for brute force and minimal slippage, the Selkirks combined high boiler pressure, balanced adhesion, efficient steam usage, and mechanical reliability. Making them ideally suited to the challenges of the Selkirk Mountains. Its success influenced future designs in balancing power with versatility. Because of the Selkirk, CPR continued investing in versatile locomotives capable of handling both freight and passenger service.

Two Selkirks were saved from the scrapyard. No. 5935 is at the Canadian Railway Museum (Exporail) in Saint-Constant, Quebec, and No. 5931 is at the Heritage Park Historical Village in Calgary, Alberta.

Note: Factor of Adhesion = Weight on the drivers / tractive effort rated(TE rated). All Factor of Adhesion values in this article were calculated with the help of LLM agent (AI), and the Factor of Adhesion can vary from the above values depending on the data used by the LLM. For example: T&P No. 610 2-10-4 had a Factor of Adhesion of 3.97. This is below the stated range above of 4.0 to 4.5 for the Texas-type locomotives. This particular locomotive was optimized for tractive effort.

Selkir T1c:
TE rated=(A·S·P·2Dw) * 0.546 = ((490.9·32·285·2)/63) * 0.546

TE rated≈(8,948,016/63≈142,825 lbf)*0.546 = 78,000 lbf., and FoA=312,000/78,000=4.0

The TE rated is saying that the effective mean pressure of 156 PSI (54.6%) is reaching the cylinders, thus resulting in 78,000 lbf.

YouTube: **SELKIRK: THE LARGEST CANADIAN LOCOMOTIVE**

TraiNgang

TraiNgang displayed their layout during the second and third weekends of April. It was great to see them out for a second year with their new, but smaller, modules.

The display looked much better this year. I posted a picture of the layout in The Whistle last year, but I showed the other side of the layout. There was not much to see in last year's photograph. The layout this year was better displayed and I enjoyed seeing the main sections of the display.

I have not looked the station schedule for visiting clubs this season and I hope we will see TraiNgang back in the station before the season ends.

Picture courtesy of Brian Ruebottom