

# Great Northern Railway

## Great Falls Sub

### Operating Rules

#### Overview

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The Great Northern Railway Mainline runs between Seattle and St. Paul. The Great Falls Sub covers the area bounded by Shelby, Havre, and Great Falls – Montana. The main yard is at Shelby, here the through trains set out freight for distribution to the rest of the sub-division and collect outgoing freight for the rest of the system.

The operator always faces North, East is to the right and West is to the left.

*Put your belly against the layout. Raise your right arm – you are now pointing to the East. Raise your left arm, you are now pointing to the West. Put your arms down.*

All mainline turnouts are electronically operated. Indicators on the front of the fascia show the orientation of the turnout: -

**Green** shows mainline. *This has buff coloured ballast and Code 70 rail.*

**Red** for diverging track. *This is the track that turns away from the mainline and is often code 55 rail.*

They can be operated by:-

Pushbutton on the fascia in line with the throw bar, *when you press the button, the red/green LED will change and any attached signal will show RED for both tracks. It can be up to 10 seconds until the turnout has changed – then the signal will turn GREEN.*

Accessory controls on the throttle or command station.

At many locations, signals also show the orientation of the turnout. Other turnouts are controlled by switch-stands. The switch stand is a slide switch that moves the throw bar. *Dwarf signals*

There is no left/right running on this system, there is a single track with passing sidings. If there is a train climbing a hill it has precedence over the downhill train, which must take the sidetrack.

#### Equipment

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The DCC System is Easydcc from CVP. The operator may use plug in throttles, RF1300 Radio throttles, T1300 radio throttles, Smart phones or Tablets through JMRI.

#### Locomotive Control

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All mainline locos are limited to 30 mph and all switchers are limited to 20 mph. All locos are equipped with lights, bell, horn or whistle.

##### Steam Locos

- ❖ Coast when the throttle is closed and require the brake to be applied **F7**.
- ❖ Must take on water when in Great Falls for a count of 5 per car.

##### Diesels

- ❖ Use Dynamic Brakes when descending grades – **F5**
- ❖ Units not fitted with Dynamic brakes must descend at no more than 10 mph

#### Driving the Trains

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**Trains must be operated in a safe manner.**

### ***The loco bell must be rung:***

- Entering or leaving a yard,
- Approaching a level crossing or passenger depot.

### ***The horn or whistle to be sounded:***

- Before a train moves away,
- Approaching a level crossing or passenger depot
- Before crossing a bridge or entering a tunnel
- Approaching another train.

### ***Speed limits:***

- In all yard/industrial areas is 10mph
- For all freights is 30mph
- For all passengers is 30mph
- Mainline operators are to use Radio Throttles or Smart Phones.

### ***Yard Limits***

- All yard locos to be driven by tethered throttles.
- When approaching a stationary car, stop a cars length from the car then approach at no more than 4 mph.
- Use a 'twistle stick' or KD magnet to uncouple cars, not your hands.
- Before a train can depart from a yard the air must be pumped up. Use a count of 3 for each car in the train.

### ***On The Road***

- Steam trains arriving in Great Falls must take on water, a count of 5 for each car in the train.
- Diesels without dynamic brakes must stop and set retainers, a count of 5 for each car in the train.

## **System of Operation**

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### **The Sweet Grass Sub uses car cards and waybills to generate traffic flow.**

#### **Waybills**

Each car has a waybill that shows its next set out location. When the car is set out, pick up a car from the **same spot**. Do **not** turn the waybill to the next position.

#### **While Operating.**

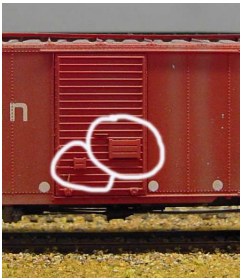
Try to understand the layout setting, philosophy and the rules of operation. Obey them even if you don't agree with them or can think of a better way.

#### **Ask questions if you are unsure.**

1. Understand the uncoupling guidelines.
2. Ask if it is OK to handle cars or not.
3. Don't handle the rolling stock or locomotives. If any leave the track, ask what to do. If asked to re-rail it, look before handling. Be careful of grab irons and other detail parts!
4. Understand the rules for spotting or removing faulty cars and locomotives. Above all, tell someone if you are having troubles with a car or other equipment.
5. Check your Waybills before leaving the yard and during the run to determine and anticipate car forwarding and switching problems. Try to know what you are going to do before you do it.
6. **Don't bend the car cards up to look below, remove the clip instead.**
7. Run the train at prototypical speeds. Don't run too fast! Try to match prototypical stops and starts.
8. Stay with your train. Don't stand at the end of aisles and watch the train disappear in the distance. The whole point of "walk around" layout planning is to try to create the illusion of really being in the cab.
9. Don't stand in the narrow parts of aisles. Also, don't try to carry on a conversation or distract yardmasters or operators when they (or you) should be doing something else.

10. Know clearance points. If a siding only takes three cars, don't try to put four into it! You will save yourself considerable embarrassment if you observe the fouling point for all turnouts and avoid throwing the turnout under a car or locomotive.
11. In general, perform pickup before set out.
12. **Observe and obey signals. If a signal is not working, assume it is displaying its most restrictive aspect and be governed accordingly.**
13. Report maintenance problems to the dispatcher. Don't shout it out! Report your difficulty as tactfully as possible.
14. Locate turnouts before throwing. If necessary, get dispatcher permission to unlock and throw mainline or passing siding turnouts.
15. **Before leaving a town, be sure turnouts are aligned correctly and locked if appropriate.**
16. Before a train can depart from a yard the air must be pumped up. Use a count of 3 for each car in the train.
17. Be patient with others, especially new, operators. We all had to learn sometime.
18. **Don't engage in non-operating related conversations in the layout room during timed operations.**
19. **Don't lean on the layout or scenery, place the cards in the rack at the front of the layout.**
20. **Red Back spiders have been employed to keep your hands off the layout.**

### Train Operations - Using car cards and waybills



**What are car cards?** Well if you look at the end or side of a unit of US freight stock you will see a 'Tack Board', this is where some of the information required to move the car is shown. It could have a chalked message or a piece of paper attached.

HO rolling stock is too small for this, so, a car card is substituted for the purpose of carrying the message. The car card would carry the minimum amount of information to identify the car. The reporting marks (road name), the car number, the type of car (using simplified AAR codes). For the benefit of the novice operator the card also carries a short description – Brown Box Car etc.

The waybill is 4 sided, and in the normal sequence of things the waybill is turned between operating sessions. This means that the car may come back again in 4 months but this can vary from industry to industry and the efficiency of the operating crews.

The waybill carries the information as to where the car has to go, I.E. town, industry, track spot, goods carried or MT. A typical waybill for a covered hopper could be set up as:



Side 1 = Havre, Centennial Mills, Track 2 spot 1. MT.

Side 2 = Rush City, Amber Milling, wheat. **VIA St Paul**

Side 3 = Woodinville, Ferndale Grain, barley, **VIA Seattle**

Side 4 = Willamette Valley Inc, Eugene, grain, **VIA Billings**

My layout has 3 main staging yards and 2 branch line staging yards. Staging yards are used to **represent the towns off the layout**. These towns are shown in the **VIA** section of the waybill and are printed in **RED**.

In the example shown above, the town of Rush City is to the east of the area I model so instead of saying east staging I use the main yard in that direction which is St Paul.

A mainline freight comes from St Paul onto the layout and enters Shelby yard. Here it will drop the cars for delivery on the layout, it will also pickup any cars for its destination which is normally Seattle. Cars which have a VIA on the waybill are obviously "through traffic" and are of no concern to the operators on this section of layout. Another, and better, name for 'this layout' is "this Sub-Division".

The cars dropped at Shelby are then sorted into "locals" for each of the industrial towns on the sub-division. The local has 5/6 cars and caboose. To have too many cars means the local is gone all session and can run out of work time. Once at the yard, the loco has to be returned to the loco yard for service and refuelling. *The Great Falls Sub has 84 'industry spots' to be serviced.*

### **The Operating Session**

There are normally two operators per crew. One drives the loco, the other is the conductor and tells the driver where to go (in a nice way!).

The local has 5/6 cars and a caboose, it takes about an hour (real time) to travel to location, switch each industry, and return to the yard. Once at the yard, the loco has to return the caboose to the caboose track and then get its self to the loco yard for service and refuelling.

Each train has a Loco Card and a Car Card for each car in the train and a Caboose card. Each car card has a waybill in the pocket.

The Loco Card has the details of the loco, Type, Road Name, Number and Capacity. The number is the address entered into the throttles.

At the front of the pocket there is a list of functions available for that loco. These are normally:-

#### **Diesel**

- F0= Headlight,
- F1= bell,
- F2= horn
- F5= dynamic brakes,
- F6= release brakes.
- F7= train brakes

#### **Steam**

- F0= Headlight
- F1= Bell
- F2= Whistle
- F3= Short Whistle/Class Lights
- F4= Whistle Quill
- F5= Water stop
- F6= Brake release
- F7= Brake
- F10= Marker Lights
- F11 = Firebox Flicker

**Treat the throttles with respect, take your time when entering numbers – they are not smart phones and they have anti - bounce protection on the buttons.**

