

GENERAL CODE  
OF  
OPERATING RULES

- *AND* -

Operator's Handbook

For The

**GREAT NORTHWESTERN  
RAILWAY COMPANY**



**OPERATING  
DEPARTMENT**

Revision 4

Effective April 25, 1973

The Great Northwestern Railway was conceived and built to be fun. In that context, the layout is designed to be operated like a prototypical railroad. As such, operations on the GNW reflects the essence of railroading. Prototype railroad rule books are lengthy and complicated since they must cover every possible circumstance over all permutations of operations. In contrast, if someone goofs and blows the rules of the GNW, no one is likely to get killed (depending on how much rolling stock hits the floor). To that end, the GNW has developed this simplified rulebook and operator's handbook. These rules were developed over years of experience. Following the rules will make the session more fun.

The rules herein set forth govern the railroad operated by the Great Northwestern Railway Company effective on the date issued.

D. H. Kurpanek  
President and Operations Manager

**GENERAL NOTICES**

- Safety is of the first importance. Walk, step, move about with care.
- A willingness to learn is an assurance to enter or remain in service.
- To obtain promotion, ability must be shown for greater responsibility.
- In case of danger to the Company's property, operators must unite to protect it. We don't need realistic crashes.

**INTRODUCTION**

Welcome to the Great Northwestern Railway. The management sincerely hopes you have an enjoyable time operating with us. This book of operating rules is meant to insure smooth and trouble-free operation of the railroad. Each operator should be familiar with it in order that all will fully enjoy the operating session.

**SAFETY FIRST**

As with all railroads, safety is of prime concern. There are numerous raised platforms and step stools for your use. Use them carefully. Watch your footing. Do not stand on chairs. If there are any safety concerns, please let someone know. If there is an existential threat in the room, proceed to the nearest exit and leave the building in an orderly fashion.

**BE CAREFUL**

Models are very fragile and can be expensive. A train with a set of DCC equipped locomotives and a dozen cars can cost over \$1,000, and contains hundreds of small parts that can easily be broken. Please treat them with extreme care.

The most common reason for a derailment is a switch thrown against the train. The prototype has a catch-phrase: "Check-Align-Check." We encourage the same when operating.

Run trains at realistically slow speeds. "Quality throttle time" is the watchword. A typical rule of thumb for mainline speed is 2 second per car passing a stationary point. Couple cars as if they were loaded with glass, they might be!

**HAVE FUN**

We are here to enjoy model railroading and to build friendships. If you are confused, uncomfortable or stressed with your task, just ask for help. Mistakes will happen. Changes can be made. And a sense of humor goes a long way.

**DEFINITIONS**

**TRAIN** — An engine, or motor car, or more than one engine, or motor car, coupled, with or without cars, displaying markers.

**REGULAR TRAIN** — A train authorized by a timetable schedule.

**EXTRA TRAIN** — A train not authorized by a timetable schedule. Most trains on the GNW are extras.

**SUPERIOR TRAIN** — A train having precedence over another train.

**TIMETABLE** — The authority for the movement of regular trains subject to the rules. It contains the classified schedules of trains with special instructions relating thereto.

**SCHEDULE** — That part of a timetable which prescribes class, direction, number and movement for a regular train.

**TRACK WARRANT** – Authorization to occupy the main track.

**MAIN TRACK** — A track extending through yards and between stations, upon which trains are operated by timetable or track warrant, or both.

**SIDING** — A track auxiliary to the main track for meeting or passing trains.

**STATION** — A place designated on the timetable by name, at which a train may or may not stop for traffic, or to enter or leave the main track, or from which fixed signals are operated.

**YARD** — A system of tracks within defined limits provided for the making up of trains, storing of cars, and other purposes, over which movements not authorized by timetable, or by track warrant, may be made, subject to prescribed signals and rules, or special Instructions.

RESTRICTED SPEED — Proceed at a speed not to exceed 15 mph prepared to stop short of train, obstruction, or anything that may require the speed of a train to be reduced.

### **GUIDELINES**

- A. Train crews shall have Train Instructions, the Train Packet, and a Track Warrant in their possession before entering the main track. Crews shall read and understand the Train Instructions and any special instructions as outlined in this booklet before entering the main line.
- B. There are two kinds of tracks: the main track and everything else. Operators are expected to know what is considered main track on the layout. Maps, fascia signs, ballast color, yard limit signs and experienced crew members will assist in determining the main track anywhere on the layout.
- C. A clearance from the dispatcher is required to be authorized to use the main track. This clearance will be in the form of a Track Warrant and will define the limits of that authorization. No train may leave its originating station without the train crew holding a valid Track Warrant.
- D. Trains shall be operated in a realistic manner. Speed limits shall be observed. Note: all locomotives on the GNW are programmed with momentum. As such, slow is good and speed is your enemy. Maximum speeds are listed on the timetable but generally are limited to 30 mph or less (approx. 2 second per 50' car to pass a stationary point). Maximum speed in yards is 15 mph. Anyone found emulating Gomez Adams will be get the raised eyebrow and may have their operating privileges revoked.

- E. Yardmasters carry authority for the control of the movement of trains within yards. Permission must be gained from the yardmaster prior to entering or moving within yards. Yes, we know this is not prototypical. But the ratio of mainline track to yard track is not realistic either.
- F. Employees must not be: Careless of the safety of themselves or others, Negligent, Insubordinate, Dishonest, Immoral, Quarrelsome or Discourteous.
- G. Food is not allowing in the layout room.
- H. Operators may bring water into the layout room. Any other drinks are not allowed. Operators are asked to be sure to have washed their hands after eating before handling the models.
- I. The use or possession of alcoholic beverages while on duty is prohibited.

**GENERAL RULES****RULES FOR MOVEMENT BY TRACK****WARRANTS**

201. Track warrants will be issued by authority and over the signature of the dispatcher and only contain information or instructions essential to such movements.

202. Track warrants must be numbered consecutively each day, beginning at midnight.

221. Unless otherwise provided, warrants will be issued by radio or PBX phone to train crews.

222. Enginemen must promptly report to the dispatcher the time of departure of their train at each station. If possible, trains will call in clear to “roll up” track warrant as they clear stations.

**SUPERIORITY OF TRAINS**

74. RIGHTS OF TRAINS ARE ASSIGNED BY TRACK WARRANT.

**TIMETABLES**

In general, the Train Instruction sheets will provide all the necessary information for operating a train. These documents are based on a current master timetable, which defines the overall railroad operating plan. Additionally, the timetable provides specific operational information about the layout.

2. Each timetable, from the moment it takes effect, supersedes the preceding timetable.

3. Not more than two times are given for a train at any station; where one is given, it is, unless otherwise indicated, the leaving time; where two, they are the arriving and the leaving times.

Schedule meeting or passing stations are indicated by figures in bold type.

Siding capacities on the timetable are the total number of 50' cars in the train which can fit into the sidings, including the engine and caboose. Thus, a capacity of 10 indicates that the engine, caboose, and eight 50' freight cars can fit between the clearance points on the siding. Train crews must take this into account when their train contains long or multi-unit cars. For convenience, maximum train lengths are listed at each yard.

The following signs when placed before the figures of the schedule indicate:

J	Junction
P	Passenger Stop
TO	Tower/Operator
X	Yard Limits
Y	Wye

**STANDARD TIME**

1. The railroad used fast clocks via the DCC system. In general, the layout runs on a 4:1 fast clock. Standard time is shown on the throttle display.

**TRAIN HANDLING**

T-1. All arriving or departing freight train consists must stand for one (scale) minute per car after the road locomotive is coupled on to charge up the air brakes, or uncoupled to allow carmen to release brakes (and retainers, if used) on all cars.

T-2. Grade crossings must be kept clear of standing cars.

T-3. If a road crossing is to be blocked for longer than 15 minutes, the train must be broken to allow traffic to pass.

T-4. Office cars must always be the last cars of any train. Office cars will be coupled into and handled gently at all times, in respect for the delicate nature of the occupants. Peeking into the office car is strictly prohibited.

HEADLIGHTS

16. The headlight will be displayed to the front of every train. It must be dimmed (F9) or extinguished (F0) when a train turns out to meet another and has stopped clear of main track, or is standing to meet a train at the end of two or more tracks or at a junction. It must be dimmed while passing through yards where yard engines are employed; approaching stations at which stops are to be made or where trains are receiving or discharging passengers; approaching track warrant signals, junctions, terminals, or meeting points or while standing on main track at meeting points and on two or more tracks when approaching trains in the opposite direction.

When an engine is running backward a white light must be displayed on the rear of the locomotive.

Locomotives not in service should extinguish their headlights and backup lights.

17. Yard engines will display the headlight to the front and rear. Yard engines will not display markers.

18. A red markers will be displayed to the rear of every train, except when engaged in switching activities.

USE OF SIGNALS

27. All locomotives are sound equipped. Use of horn and bell is encouraged to warn scale motorists and pedestrians of the presence of a train or locomotive.

28. The engine-bell must be rung (F1) when an engine is about to move and while approaching and passing public crossings at grade.

SIGNALS

29. ENGINE WHISTLE SIGNALS. (F2, and F3 for short horn where available)

NOTE.—The signals prescribed are illustrated by “o” for short sounds “—” for longer sounds. The sound of the whistle should be distinct, with intensity and duration proportionate to the distance the signal is to be conveyed.

SOUND INDICATION

- |     |                            |  |
|-----|----------------------------|--|
| (a) | o                          | Apply brakes. Stop.  |
| (b) | — —                        | Release brakes. Proceed.   |
| (f) | ooo                        | When standing, back up.  |
| (h) | — — o —                    | Approaching public crossings at grade to be prolonged or repeated until crossing is reached. |
| (i) | —————                      | Approaching stations, junctions, railroad crossings at grade and as may be required.         |
| (j) | — — oo                     | Approaching meeting or waiting points.   |
| (k) | Succession of short sounds | Alarm for persons or livestock on the track  |

MOVEMENT OF TRAINS

81. A main track must not be occupied without authority, and it must not be fouled until, by observation or protection by flagmen, the engineer or the conductor is assured it is safe to do so.

92. Within yard limits, the main track may be used, protecting against first-class trains. Second class and extra trains must move within yard limits prepared to stop, unless the main track is seen or known to be clear.

93. Within yard limits engines may use main track without train-order authority, clearing or protecting against first-class trains and without flag protection against second and inferior class trains, extra trains and engines.

94. Extra trains must not be run without track warrants.

99 A train occupying the main line without authority must send out flag men in both directions to protect against overtaking and opposing trains.

104. Switches must be left in proper position after having been used. Conductors are responsible for the position of the switches set by them and their trainmen but, when practicable, the engineman must see that the switches nearest the engine are properly set. A switch must not be left open for a following train unless in charge of a trainman of such train. The normal position of switches is for the movement of trains along the main line.

105. Trains using a siding must proceed, expecting to find it occupied.

### **FREIGHT TRAIN RULES**

F-1. Extra freight trains must stop at posted yard limits and call for permission from the Yardmaster to proceed into the yard. (Yes, we know this is not how the prototype does it.)

F-2. It is the responsibility of the train crew to see that the train paperwork is in the proper order prior to departure from initial terminal and at arrival at final destination. CREWS WILL MAKE A WHEEL CHECK OF THEIR TRAIN CONSIST PRIOR TO DEPARTURE, AND ON ARRIVAL AT THE FINAL TERMINAL. (Yes, twice.)

F-3. All crews must be familiar with the track capacities as shown in the timetable. If a car cannot be spotted, it must be stored in a yard track or some other unused track until room is available. The waybill must be placed in the "Hold" box. If there is no room available to store a car in town, then the car must be taken to the nearest yard in the direction of travel.

F-4. Caboose must always be carried at the rear of all trains. Backing of trains outside of yard

limits is strictly prohibited. Yes, this means crews operating locals will have to turn trains.

F-4a. Exception to Rule F-4: The Sinclair Baker Refinery at Coyote is accessible by a simple reverse move across the main. The Sinclair local may reverse move into Armstrong Yard.

F-5. Caboose will be removed from inbound trains as soon as possible and delivered to the caboose track

F-6. High-Wide or locomotives moving dead in consist shall be coupled next to the engines.

F-7. Hazardous-material (HAZ-MAT) cars should be no closer than the one car from occupied engines or caboose. This rule does not apply to yard switchers or local switching moves.

### **SUPPLEMENTAL RULES AND INSTRUCTIONS**

#### **GENERAL**

Problems with track, electronics, or other equipment shall be directed to the Trainmaster for resolution.

Turnout controls – Most turnouts on the GNW are manual. These are operated by the manual ground throws provided.

Derailed equipment - Derailed equipment shall be rerailed with care. Handling should be by the equipment trucks only, if at all possible.

Locomotives should be handled by their fuel tanks or trucks only, not by grabbing the sides of the carbody. If a car or train needs to be 'bumped' or moved, push on the coupler.

NOTE: If a locomotive has sound coming from it, or has any lights on, it has power. There is no need to bump or push it in an attempt to make it move. In general, if the lights and/or sound is on, the reason it is not moving is that the brakes are on. Cycle F7 at least twice, assure it is off, and



VG Valley Gate  
 WC Wren Canyon

**LINESIDE SIGNALS**

Signals are grouped into two types: main track protection and interlocking.

Main track protection signals are set up as automatic block signals (ABS) or absolute permissive block signals (APB). In general, signals convey TRACK OCCUPANCY, NOT AUTHORITY. In other words, a green signal means the track ahead is not occupied, not that a train has authority to use that track. All authority is conveyed via Track Warrant.


















Sessions may be operated by CTC. In these sessions, track authority will be conveyed by signal indication.

Regardless of train control system, signals displaying stop must be treated as absolute, and cannot be passed without proper authority. If a red signal is to be passed, it must be done at restricted speed (15 mph or less) and the train crew must be prepared to stop.

Without getting into the details of signaling systems, a general rule can be followed: “if it’s not all red, it is not red at all.” In other words, any signal displaying any color other than solid red may be safely passed. Note, flashing red is not a solid red, and considered a permissive signal.

The following summarizes the indications, aspects, and meanings of signals used on the GNW.

**Signal Aspect, Indication and Rule**

	N/A	<b>9.1.1 Distant Signal Clear</b> Proceed
	N/A	<b>9.1.2 Distant Signal Approach</b> Prepare to stop short of next signal
 Dwarf 	Dwarf	<b>9.1.3 Clear</b> Proceed
 Dwarf 	Dwarf	<b>9.1.6 Approach Medium</b> Proceed not exceeding prescribed speed through turnout(s).
 Dwarf 	Dwarf	<b>9.1.9 Approach</b> Proceed prepared to stop at next signal.
	N/A	<b>9.1.7 Approach Diverging</b> Slow prepared to proceed on diverging route not exceeding prescribed speed through turnout(s).
 Dwarf 	Dwarf	<b>9.1.8 Diverging Clear</b> Proceed on diverging route not exceeding prescribed speed through turnout(s).
 Dwarf 	Dwarf	<b>9.1.11 Diverging Approach</b> Proceed on diverging route not exceeding prescribed speed through turnout(s), and prepared to stop at next signal.
 Dwarf 	Dwarf	<b>9.1.12 Restricting</b> Proceed at restricted speed.
 Dwarf 	Dwarf	<b>9.1.14 Stop</b> Stop before train or engine passes the signal.



## **OPERATOR'S HANDBOOK**

The GNW Operator's Handbook is a companion to the General Code of Operating Rules to provide operating resources, tips and tricks, and share standard work methods. We hope this handbook assists you in becoming a great operator, not only on the GNW, but on any model railroad.

### **GENERAL**

The Great Northwestern is a proto-freelanced model railroad set in the hinterlands of New Mexico in the late 1970s. A couple key points on the term Proto-Freelanced.

- "Proto" indicates the goal of the layout is to run it as prototypically as practical. To that end, the layout is set up for operations, including staging yards to generate traffic "beyond the basement," on-line industries and connecting railroads to generate traffic, and a defined workflow of trains and cars. Additionally, the locomotives are all sound equipped and programmed with momentum and braking to simulate prototypical train handling, at least to a practical degree. The layout attempts to model elements to scale and in alignments with a unifying theme.
- "Freelanced" indicates this layout is not conformed to any particular railroad or location. It is generically set in the late 1970s to guide selection of motive power, rolling stock, and supporting scenery. But the layout including track plans are tailored to a fictional railroad, the Great Northwestern, with adaptations to make it practical for a basement. Locomotives, rolling stock, yards, industries and supporting scenery do not follow a specific prototype, but are selected to develop a plausible look and feel of a real railroad.

Operators are asked to follow the intent of this goal. At the same time, it is not intended to become burdensome or tedious. The ultimate goal of operations on the GNW is to connect with people and have fun.

### **OPERATION OVERVIEW**

Trains are run on a sequence defined before each operating session. The trains are released either at a set time or in connection with the operation of another train. Time is set by the railroad clock, which is generally set to a 4:1 ratio. In general, the sequence is repeated as a 24 hour cycle, where each session represents 12 hours, played out in 3 actual hours per operating session.

Operating positions are selected at the beginning of each session. In general, the positions are randomly selected. However critical positions (i.e., yard masters) are offered to those who have demonstrated experience in handling them.

Road crews are assigned in sequence and as trains are needed. Trains may be added or annulled depending on the need or available crews. When short of crews, generally commute trains are annulled first and they layout is run on a "Saturday" schedule.

Trains are generally left wherever they are at the end of the session.

### **CREW POSITIONS**

The layout has the following crew positions:

- Train Master: Responsible for the management and mis-management of the railroad, and is to be contacted with any operational concerns or problems. Also responsible for any repairs or access under the layout.
- Dispatcher: Also known as "the great delayer," responsible for the safe and efficient movement of trains over the railroad.

- **Armstrong Yardmaster:** Responsible for and in charge of Armstrong yard including the drill track up to and including the East Turay Wye, but NOT including the main track and siding. Must notify Dispatcher if access to main or siding track is needed. Must notify Dispatcher at least 1 hour in advance of time crew is needed for outbound trains, regardless if scheduled or extra.
- **Warm Springs Yardmaster:** Responsible for and in charge of Warm Springs yard including servicing the associated industries. The main track and siding at Warm Springs are under yard limits. Must notify Dispatcher at least 1 hour in advance of time crew is needed for outbound trains, regardless if scheduled or extra.
- **Valley Gate Yardmaster:** Valley Gate Yard is the main yard for the Colorado and Southern Scenic RR, and not staffed continuously. When staffed, the VG YM is responsible for and in charge of Valley Gate yard up to but not including West Coyote, and NOT including the main track. Must notify Dispatcher if access to main or siding track is needed. Must notify Dispatcher at least 1 hour in advance of time crew is needed for outbound trains, including transfers to Armstrong, regardless if scheduled or extra.
- **Road Crew (Engineer):** Responsible for locating power and movement to the train, the operation of trains including checking of consist, car cards, air test (making sure train is properly coupled) and completion of work as assigned. Engineer is responsible for the proper alignment of switches and return to normal position upon completion of the work.

- **Fireman:** Any crew not yet certified to operate across the layout will do at least one run alongside an experienced engineer before being promoted to Engineer.
- **Industrial Track Operator:** Occasionally, operators will be asked to function as an industrial rail operation operator. In this role, they will support the movement of rail cars and equipment as needed within the track limits of the particular industry. Examples on the GNW include: Jones-Heartz at Abajo Caliente; Western Rail Services at Valley Gate and Halcon Cement intra-plant car movements.

### **OPERATION BASICS**

**EAST and WEST** Trains are specified as running east bound or westbound. Fascia signage as well as instructions are provided to define direction of travel.

**Fascia Signage** Signage along fascia is provided to assist in identifying locations, track names, control points and industry locations, including TIBS identifiers.

**Track Names** All tracks on the railroad have a specific name to avoid confusion. Whenever possible, refer to the specific track name when communicating with other operators.

**Main Track, Siding, And Everything Else** As outlined in the GCOR, the main track is always under dispatcher control, with the exception of yard limits under certain conditions. Sidings are also controlled by the Dispatcher (DS). As such, all operators must be cognizant of what track they are on. Access to the main or siding must be accompanied with a track warrant. All track other than main track and siding is uncontrolled and under either Yardmaster control or considered industrial trackage.

**Yard Tracks and Yard Limits** Yard tracks are under the control of the Yardmaster (YM). Trains and engines can move freely within yards in accordance with YM instructions. Speed should not exceed 15 mph, and being prepared to stop short of any train, obstruction or improperly aligned switch (remember, we do have momentum!). Yard Limits allow yard operations on the main or siding without Dispatcher permission, provided the tracks are cleared at least 5 minutes before the scheduled arrival of any first class train. Yard limits exist at Warm Springs. Yard limits DO NOT exist at Armstrong or Valley Gate.

**Staging Yard and Tracks** Staging tracks are used to represent points east and west, outside of the actual modeled portion of the railroad. The staging yard is comprised of 9 tracks, each track broken into 3 segments: east, center and west. Track 1, the closest to the aisle, is to remain open and considered a 'through' track. The staging yard is controlled by the dispatcher. Crews picking up a train will be instructed where their train is located in staging, and crews returning trains to staging will be directed where to stop.

### **CAR CARDS, WAYBILLS AND THE MOVING OF CARS**

All rolling stock, including freight cars, locomotives and cabooses, on the GNW has an associated car card. Every car card has a pocket for a waybill. Rolling stock that has a destination includes a waybill, located within the car card pocket. The waybill has the routing information.

Cars are forwarded on the GNW utilize the Train-Industry Blocking System, or "TIBS". TIBS defined the specific city and industry location for each waybill via a code identifier. The code identifiers are outlined in the appendix in the back of this rulebook.

Operators should NOT flip waybills as a part of any operating session. Waybills will be update/flipped between operating sessions.

Every industrial area includes a car card box with pockets identifying "Setout", "Hold", and "Pickup". The pocket for "Setout" shall receive any car cards for cars properly spotted at the destination location. The "Pickup" pocket holds car cards for the cars to be picked up by the local crew for forwarding. The "Hold" pocket contains the car cards for cars not able to be spotted at the final destination location or are otherwise temporarily set out. Note that if the destination siding or other spotting location already has a car spotted there, additional cars cannot be considered as spotted there and the associated car card shall be placed in the "Hold" pocket. Once the siding or spot has cleared out, and the car awaiting spotting is properly spotted, only then can the associated car card be moved to the "Setout" pocket.

Bad order cars shall be set out as soon as convenient and be "Pink Tagged" and the car card placed in the nearest "Hold" pocket.

All trains operated on the GNW will have engine cards included with the train paperwork. In general, engine cards are assigned with the train.

Locomotives require 90-day inspections. Locomotives with inspection requirements will have a note attached to their associated card indicating the location for the inspection. Inspections take 12 hours and the locomotive may not be moved during this inspection period.

The GNW utilizes two locomotive and car repair facilities; one in Warm Springs and the one in Valley Gate. These facilities will receive locomotives and cars for work as specified on the inspection card. Locomotives shipped "dead-in-consist" shall be handled next to the operating locomotives at the head of the train. All movements will be made carefully and at

restricted speed within the yards and engine service areas.

## Operating Tips

### ARMSTRONG

Armstrong DOES NOT have yard limits. As such, the main line and siding is under the control of the dispatcher at all times, and the yardmaster must expect trains to be routed on and through Armstrong at any time. [The mainline is identified as the track with the light colored ballast.]

Armstrong serves as an entry and exit point for off-layout car movements. It also serves to originate some trains on the modeled portion of the railroad.

In general, any train dropping or picking up cars at Armstrong should be routed through the A/D tracks. This allows direct access to the classification yard, while keeping both the main and siding open for main track operations.

Access to the A/D tracks is via the respective East or West Yard leads, or, if westbound, via the crossovers at Armstrong. The DS will route trains to the signals at either Coyote or Turay. There the trains must be given permission to enter by the YM. A push button with a white indicating lamp is provided to show the permissive status. When the permissive button is pressed, the circuit latches in and the white light will illuminate, while the respective signal will show a flashing red or lunar permissive. As soon as the control point detects the train, the permissive signal will drop and show red over red until once again reset by the YM.

Should the Armstrong YM required access or use of switches accessing either the main or siding, the YM shall call the DS and request the specific switch to be thrown.

Turning equipment and trains - Equipment to be turned at Armstrong is to be turned on the wye at

East Turay. Controls and video cameras are provided at East Turay to assist in locating the position of rolling stock on the wye.

### VALLEY GATE

Valley Gate DOES NOT have yard limits. As such, the main line is under the control of the dispatcher at all times, and the yardmaster must expect trains to be routed on and through Valley Gate at any time. The mainline is identified as the track with the light colored ballast.

Valley Gate is the operating yard for the Colorado and Southern Scenic Railroad. The tourist line stores and services all their equipment there. Additionally Valley Gate is the operations center for the Western Rail Service's locomotive and car shops. The Abajo Caliente Local serves Valley Gate as a part of its run.

Turning equipment and trains - Equipment to be turned at Valley Gate is to be turned on the turntable. To use the turntable, run the equipment onto the turntable, and bump (not hold) the control button for the direction intended. The turntable will automatically index at the next available track. Keep bumping the direction button until the desired track is selected. If needed, the turntable can be manually moved by pressing and holding the button until aligned as desired.

The turntable at Valley Gate also automatically changes polarity automatically, however it is not "bumpless". The locomotive will de-power and repower as it passes through the polarity reversal point.

### WARM SPRINGS

Yard limits exist at Warm Spring and extend from end of track at Warm Springs, through Sand Creek and to the east end of El Vado. All track within these limits are under the authority of the Warm Springs Yardmaster.

There are a pair of inbound signals at the yard limits. These are set up to automatically be in the stop indication forcing arriving trains to stop and wait for a signal before entering the yard. A panel at the WS yard provides interlocking control of these signals. If a train is permitted in, the turnout should be thrown to the proper position to align the track at El Vado into the yard. The YM should then press the release button to provide a Proceed at Restricted Speed indication (lunar white signal), giving the inbound train permission to enter the yard limits. The signals will reset to stop indication as soon as the interlocking limits are occupied. Should there be recurring traffic at the interlocking (e.g., switching at the power plant) and the YM does not want to have to repeatedly reset the signal, an option to provide a Restricting indication (flashing red signal) is provided on the interlocking panel.

It is recommended to keep track 3, Arrival/Departure open, and used for the receiving of all trains. It is the longest track and easiest to access. Locate the switcher at the east end of the siding and use switch #4 to access the main to break up especially long trains.

Equipment to be turned at Warm Springs shall be turned on the wye at Mesa City. Note that Mesa City is a branch line, outside of the Warm Springs Yard Limits and will require authorization to access by means of a track warrant.

### **EL VADO**

El Vado is entirely within the Warm Springs Yard Limits, including the branch line to spur to Frankfurters.

El Vado has several turnouts that are difficult to access. These are actuated by slow-motion switch motors, controlled by 2-position slide switches located on the layout fascia. Turnout numbers are identified by signs near the turnouts and correspond to the numbers above the slide switches.

Wm Nixon Generating Station coal deliveries and empty pick ups are handled by the Rio Grande coal train crew.

### **MESA CITY**

Wye tracks at Mesa City must be kept clear to allow turning of locomotives in support of Warm Springs yard operations.

The siding at Mesa City must be kept clear to allow the switching of cars for the Wm Nixon Generating Station.

### **ABAJO CALIENTE**

Jones Hartz Company owns a locomotive for in-plant switching moves. This locomotive is not FRA inspected and is not approved for movements on the main line. It may be used to assist in the set out and pick up of cars on the Abajo Caliente siding, however may not pass the clearance point of the switch off the main.

### **STAGING YARDS**

Turnouts associated with the staging yards are all slow-motion switch motor controlled by the dispatcher via LCC. Each track in the staging yards is assigned a track number corresponding to the route number to align the associated turnouts. In general, these tracks are controlled by the dispatcher.

## **Throttles**

The railroad is based on the MRC Prodigy Advance DCC system. As such, the layout includes several MRC Prodigy Advance throttles for operator use. The GNW is also provided with a Wi-Fi interface for connection of operator cell phone or wi-fi enabled throttles.

### **MRC Prodigy Advance/Wireless Throttle**

Most of the MRC Prodigy Advance throttles for operator use are wireless for convenience. Two

tethered units are provided for yard use if needed at Warm Springs and Valley Gate.

The GNW is also provided with a Wi-Fi interface for connection of cell phone or wi-fi enabled throttles.

### MRC Throttle Operation



**Power Switch**

Throttles -

A typical throttle display is shown. It provides the engine number, direction, speed, scale time, and which functions are turned on.

To assign a locomotive, press LOCO, input the

engine number, and press Enter.

If the locomotive was previously assigned, press Recall until the desired engine number appears.

Direction is selected by touching the DIRECTION button. The current direction is displayed. Note that all engines should have a small "F" stenciled on the "Front" of the loco to identify the forward direction.

Throttle position may be set by either turning the throttle knob or by touching the "+1 Enter" or "Del -1" keys. To change/confirm the speed settings, press SPD STEP. The speed setting of 28 should generally be used.

Dedicated buttons are provided for the bell, whistle, and headlight functions.

Railroad Standard Scale Time may be displayed by pressing the "TIME" button. Touching the red "STOP" button will immediately stop the loco currently selected. Holding the red "STOP" button for more than 3 seconds will stop all trains on the railroad.

### Wi-Fi Throttle Operation

Any Android or Apple based cell phone can function as a throttle. In fact, many operators prefer use of their own cell phone-based throttle as the operation is the same regardless of the layout or DCC system they are running. Additionally, there are Wi-Fi based throttles available that replicate an actual control stand of a locomotive. These may be connected to the layout via Wi-Fi.

When using the WiFi, be sure download the app before arriving. There are several, but the most popular are:

WiThrottle – for Apple products

Engine Driver – for Android products

To connect to the GNW's Wi-Fi interface, go to your phone's Wi-Fi network selection setting and look for "MRCWi-Fi". Connect to this, and the app will automatically find the connection.

The system is able to handle up to 8 Wi-Fi connected throttles.

### General Throttle Operation

Functions are listed on the associated Locomotive Card. Typical functions are as follows:

- 0 – Headlight
- 1 – Bell
- 2 – Horn (Long)
- 3 – Horn (Short)
- 4 – Dynamic Brakes
- 5 – Rotary Beacon or Gyalright

6 – Backup Light

7 – Brakes

8 – Mute Sound

9 – Dim Headlight/Backup Light

### **HORN, BELL and LIGHTS**

After all the amazing technology and work needed to equip locomotives with sound, crews are often hesitant to sound the horn and bell. The GNW encourages use of the horn and bell to keep our employees and communities safe.

**BELL:** Should be sounded whenever moving or preparing to move in a congested area such as engine terminal, yards, grade crossings, and in industrial areas.

**HORN:** Horn should be sounded whenever preparing to move and at grade crossings. Refer to the GCOR for additional information related to specific horn use.

**LIGHTS:** The locomotive headlight and beacon or gyrating lights should be on any time the locomotive is moving. When passing another train, headlight should be dimmed or extinguished.

### **TRAIN HANDLING**

Locomotives are all equipped with momentum and braking. As such, all movements should be made with deliberate forethought on speed and direction. In general, this means planning of moves and operating slowly.

Braking reduces the amount of distance to stop by approximately half the distance if the throttle was simply shut off. Switchers have slightly higher levels of braking and less momentum to facilitate switching operations.

Brakes on all engines are located on F7. If a train has lights and sound, but is not moving, it is likely the brakes are still active. In some cases, the decoder may have ‘missed’ the Brake-Off

command and F7 will need to be cycled on and off to confirm releasing brakes. Sometimes it is easy to get ahead of the momentum and braking where the engine does not appear to be responding. In these situations, reduce the throttle position to zero, let the engine cycle down to an idle, cycle the brakes, and resume operation.

### **CAR HANDLING**

All cars are routed using the TIBS system. Please refer to separate documentation for the use of TIBS.

Uncoupling – Most uncoupling is done manually. There are few under the tie magnetic uncouplers along the rear tracks at Sand Creek. Their locations are identified as the roadway crossings just west of Switch #1.

Normal uncoupling is done via skewers. To use, insert the tip of the skewer in between the coupler faces and gently twist. Some cars, notably passenger cars, do not allow use of skewers. In these cases, a pick may be used to pull the air hoses apart, or the car may be gently raised by picking up one truck on the end of the car to be uncoupled.

### **GENERAL COMMUNICATIONS**

Communications work best when they are clear and to the point. As such, the preferred manner of communicating to either the dispatcher or yard master is by sharing 3 simple pieces of information:

- Who you are
- Where you are
- Where you want to go

From that initial call, the DS or YM can then transmit a track warrant or route the train as needed.

**TELEPHONE PROCEDURES**

In general, telephones will be used to communicate between the dispatcher, yardmasters and road crews. Telephones are located throughout the layout, with extension numbers listed adjacent to the phones. When picking up the phone, the dial tone will sound. Please note the tone is a higher pitch than the conventional, US phone system dial tone and is normal for the system.

Once the call is made, operators should identify themselves and state their request clearly.

**RADIO PROCEDURES**

If desired, road crews may use FRS type radios to communicate track warrants and other pertinent information.

2.1 Transmitting

Any employee operating a radio must do the following:

- \* Before transmitting, listen long enough to make sure the channel is not being used.
- \* Give the required identification.
- \* Not proceed with further transmission until acknowledgment is received.

2.2 Required Identification

Employees transmitting or acknowledging a radio communication must begin with the required identification. The identification must include the following in this order:

- \* For base or wayside stations:
  - \* Name or initials of the railroad
  - \* Name and location or other unique designation

- \* For mobile units:

- \* Name or initials of the railroad
- \* Train name (number), engine number, or words that identify the precise mobile unit

Short Identification: After making a positive identification for switching, classification, and similar operations within a yard, fixed and mobile units may use a short identification after the initial transmission and acknowledgment.

Track warrants must be read back by crews. Once confirmed, dispatcher shall confirm readback and OK with time.

2.11 Prohibited Transmissions

Employees must not use indecent language over the radio.

2.14 Transmitting Track Warrants and Track Bulletins

When transmitted by radio, track warrants and track bulletins must be transmitted according to applicable operating rules and the following:

- \* The train dispatcher must state that a track warrant or track bulletin will be transmitted.
- \* The employee must inform the train dispatcher when ready to copy.
- \* The employee receiving track warrants or track bulletins must copy them in writing using the format outlined in the operating rules and read back to the Dispatcher.

2.16 Assigned Frequencies

FRS Channel information for Railway operations:

Channel	11
Subchannel	01

**Track Diagrams**



