Missabe Northern Railway Operation

By Jeff Otto – January 2025

Introduction

The purpose of this document is to introduce and level-set guest operators to the HO scale Missabe Northern Railway and its operating practices. Reading this in advance will let me greatly shorten the "briefing" at the beginning of the operating session so that a higher percentage of your time in my basement will be doing rather than listening.

The challenge for me is that some of you reading this may be relatively new to railway operations, some experienced but new to the Missabe Northern, and others returning occasional operators that will benefit from reminders and perhaps new points since your last visit. It also serves to indicate things you may already know that are part of the practices here as well as nuances perhaps a bit different.

Most jobs are designed to be interesting and fun with minimal time pressure. There also certainly are more challenging jobs for those with more experience and desiring to grow in railroad experience. 2/3 of the jobs are within terminal areas where you don't need to deal with dispatcher clearances. But there is also plenty of over-the-road action, and lots of switching for all including the passenger trains. **Sorry, guest dispatchers are not allowed** during large ProRail or MinnRail operating sessions due to the size of the railroad and transportation plan to learn.

I am a life-long model railroader and railfan, retired from a 31-year career in the railroad industry with three Class 1 railroads. The Missabe Northern design is a blend of those three character flaws. The large size of the Missabe Northern lets me include a wide variety of railroad experience and reflects that I enjoy trains running on sweeping curves on open track as much as I like a variety of switching opportunities. It is built obviously to share with a major goal to make it as straightforward as possible for guests to quickly start having fun while capturing the flavor of full-size railroading as realistically as practical with realistic performance to match.

The Setting

The Missabe Northern Railway is a fictitious operating company jointly owned by the Great Northern Railway and the Duluth, Missabe and Iron Range Railway. Mainline train movements are controlled by dispatcher authority. A dispatcher "party line" phone and yard intercoms facilitate communications around the railroad.

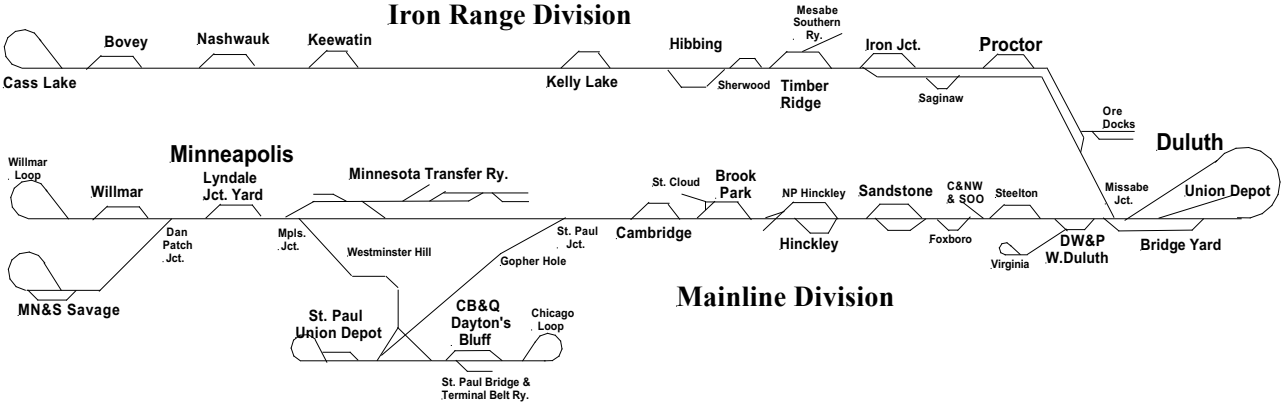
The time period is early '40's so that favorite steam power may be represented. A full roster of diesels for 1963 (I like GP-30s, too) is available, but usually kept out of reach of polite society and operators…. The operating day runs from 6 am to 6 pm with a 3:1 fast clock. No daylight headlights required in this era of Rule 17.

The Missabe Northern Railway is essentially two routes joined at the hip, Duluth. The main deck route runs railroad-west from Duluth to the Twin Cities Terminals of Minneapolis and St. Paul. The other route climbs

Proctor Hill west out of Duluth to an upper deck that represents running from Proctor railroad-west to the Mesabi Iron Range. This makes it "map oriented", meaning for both decks you are looking north at the railroad with east to the right toward Duluth. The only exceptions are the dock peninsulas at Duluth that offer a 300-degree view of the docks from the harbor. GN's east-west designation is used (rather than DM&IR's north-south) to avoid confusion on the Iron Range, since the route is a "morphed" hybrid of the two railroads.

There are three general types of car fleets on the Missabe Northern: passenger, freight, and ore. Ore is recognized separately because that fleet of 1,100 is nearly 50% of all cars and they are handled differently than general freight traffic.

Missabe Northern Railway



Operating Mechanics

Missabe Northern (DMIR and GN) Main Track has Pink Lady quartzite ballast. Secondary track and other railroads are other colors. This is helpful when running in a terminal complex to know which track is the main.

The only double track is DM&IR double track on both approaches to Proctor, so it follows the DM&IR practice of **left-hand running** for visual accuracy and to match the functional layout of Proctor Yard's sub-yards.

A design goal is to minimize the need to reach into a scene, spoiling the railfan scene of operation. Turnout control rods on the fascia, as with interlocking towers, are "in" for the normal position, pulled out for the reverse or thrown position. When pulled out, the dowel rod will display **red if the turnout affects main track** and yellow if not. Black knobs control track at the back of a scene – "black in back". This reduces the possibility of two operators working on parallel leads moving the wrong switch points and derailing the other movement.

Many under-track uncoupling magnets are controlled using dowel rods with no knobs where **"in" is off (normal)** and pulled out positions the magnet for use. Magnets with a white-marked tie are moveable, yellow denotes fixed such as for spurs and yard body tracks. Many of the markings on the upper deck are carried up onto the side of the rail for easier spotting.

Return turnouts and magnets to Normal position (push rod pushed in) when you finish at a location.

Return your throttle to where you got it and remove the battery when done. **Do NOT zero out the address.** This just wears out the throttle twice as fast. Throttles at assigned locations usually run the same engine every session.

Let ME re-rail my brass steam engines if a derailment accidently occurs. Most have track wipers that can snag on the rail during re-railing, some are missing screws, and none like being grabbed by the side rods and valve gear.

Do not suffer with a miss-behaving engine, car, or track. I will fix or replace it on the spot whenever possible.

Operation

One-person crews are utilized (serving as both engineer and conductor or footboard yardmaster). The major yards of Lyndale, Duluth, and Proctor have true full-time yardmasters, each coordinating and managing 3-4 switch engines. Those three yardmasters and the dispatcher are the only jobs without a throttle in their hands.

All trains including passenger trains have at least some switching to perform.

Mainline train movement is controlled by a dispatcher between areas of yard and industrial limits. The DTC Train Order sheet schematic shows all limits in addition to the main track DTC Block numbers. The size of the railroad and the relatively few through trains provide a relaxed, low-key operation friendly to introducing modelers to the team sport of realistic railroad operation. 3:1 fast clocks are used to add to the illusion of time and distance and of course are essential when passenger trains are moving.

Yard Limit signs indicate Absolute Stop (because no signals) UNLESS specific authority to proceed beyond the sign (in either direction) has been issued by the person in charge of that track. There is no Main Track designated in Sandstone Industrial Limits, which means 1st class trains hold no special authority over other classes of trains at that location. This is done because the depot is on the North Pass, not the main line. It also gives the Sandstone switcher freedom to make its frequent moves from the south side to the north side and back, thereby reducing dispatcher workload.

Work locations have printed Work Plans to guide you on the goals of that job. In most cases the priorities are left to you based on the traffic and situation you face at the time. Work Plans are located at each work site for the crew working the location. This keeps the timetable size compact and everyone doesn't need to flip through pages of special instructions to find what only a crew needs for the current location they are working.

Large yards have a departure guide for various trains and their assigned pool of engines so that appropriately-sized power is assigned to the nature of the train and route.

The marked magnet locations represent the safe clearance point for industrial and yard tracks. There should NEVER be any portion of a car left occupying any space between the safe clearance point and the associated turnout. NO exceptions, period. This is a life and death safety rule for full size railroading. (Passing sidings may have more than one magnet to serve multiple industry spurs and so are a different situation.)

If an "extra" car is billed into a full industry track, you may turn the waybill of a car in place so it becomes a pickup. Then do the switching so the track is left in a safe condition. This is because many locations do not have the track space to leave cars "off spot" and long passing sidings are NOT to be used for off-spot cars.

Administration

A "train pack" includes a large clip, a Train Header card describing the work locations the train serves and your engine card. Freight and ore trains will have a red caboose card whose pocket is a convenient place to store the engine card. Car cards should match all cars in the train in order. Passenger trains are similar except instead of a caboose card there will be a Consist card specifying the order certain car types are to be placed in the train if present in today's version of the train (as indicated by waybills). Passenger cards and waybills are white.

Any trains going to crew change points (staging or visible staging) will have specific instructions at the bottom of the Train Header describing how the train is to be parked. This orients it properly for its next use.

Locals switch town industries, through freights do not. But through freights may have "block swaps" to make at designated locations. This is a simple hand-off. A local or a town switcher will then actually spot the cars at the industries. The written clue on the Train Header will be the term "block swap" on through trains, which are low 400-series freight trains. Locals will use the abbreviations SO and PU for industry setouts and pickups or simply "Switch".

Car forwarding is based on the "car card and waybill" concept adapted to Missabe Northern needs. Waybills contain only essential movement information so the print can be as large as possible and so the reader doesn't need to skim over boiler plate to find it. Card box slots exist for every track where cars are placed for ease of keeping inventory properly by track. Waybills set for the current location are holds, all others are pick-ups. Waybills generally list 1)location, 2)industry name, and 3)type of freight or a warehouse door for spotting. The color location box may have two lines so that locations within the large Minneapolis and Duluth terminals may be indicated to aid switching upon arrival.

Passenger equipment also has individual car cards and waybill information, as some trains need to be made up before departure and need to be switched out at final terminal and sometimes in route. Do not turn waybills or the System General Agent (me) will time-slip you.

Caboose cards are red and have a simple schematic of the railroad on the back identifying major locations.

Switch List forms and clipboards are available at the Dispatcher's desk if desired. Two-man crews should be used so that the extra paperwork does not unduly slow the work of the job. Inventory of car placement and pickups still needs to be maintained with the car cards before you leave a location.

Keep car card inventory from front to back as cars stand. For a train, this is engine to caboose. For a track, this is from switch to bumper or lead into body. Miss-matched or orphaned cars and cards should be brought to the "orphan table" next to Duluth.

Clip a train pack at the bottom of the cards, not top. This reduces wear on printing at top and concave curling of cards (won't stand straight for easy reading in card box). **Do not turn car cards or train packs backwards** in box slot when you complete a task. 50% of car cards are double sided with a 2-move waybill printed on the card, so you'd mess up the billing if you turned a train pack as a unit.

Ore cars all move in "mine blocks" of 5 cars. A single car card lists the 5 cars of a mine block, so a 60-car road ore train is only 12 car cards (plus caboose card with engine card).

Ore Operations

All ore movements between Proctor and the Iron Range mines and yards are handled ONLY in dedicated ore trains and mine turns. (These aren't unit trains in the modern sense of staying intact throughout their cycle, hence the term dedicated.) The occasional mine block or two destined to or from the steel mill at Steelton is handled by an NP ore transfer turn from Superior staging to Duluth and on up to Proctor and Iron Jct., then back to Superior.

The larger mine and washer facilities are switched differently than typical smaller industries. They have separate dedicated tracks for empties (Mtys) and loads from the tipples. In such situations, the Mtys are spotted first before gathering loads. If not done this way, you will quickly find yourself tied to long cuts of cars making you needlessly poke out onto and tying up main track for headroom. Follow the printed guidelines. There is also a smaller mine and one mine interchange where the loads are pulled out first to make room to spot the Mtys like a typical small industry.