

NEVADA STATE RAILROAD MUSEUM

CARSON CITY, NEVADA



1926 EDWARDS MOTORCAR

MOTORMAN / CONDUCTOR HANDBOOK

2010

Motorman / Conductor

Description: The Motorman/Conductor is a volunteer who is responsible for the safe operation of the train to which he is assigned. He is responsible for the safety of the passengers aboard his train and in addition, shall demonstrate concern for their comfort and enjoyment. He shall be responsible for seeing that trains operate on schedule and that adequate and responsible personnel are on hand to carry out such operations. He will familiarize himself with the safe operation of trains, the history and background of the equipment in use, and the museum grounds and facilities in order to be able to answer the public's questions.

The Motorman/Conductor will be familiar with proper equipment operation. He is expected to sell tickets when no Ticket Agent is available. He will perform maintenance on the Motorcar as needed.

Conductor's duties include:

1. Following the instructions in Motorman/Conductor Handbook.
2. Working in a safe manner.
3. Inspecting both the interior and exterior of the Motorcar at the start of the day to check for anything that may cause an unsafe condition.
4. Directing the Motorman in moving the Motorcar onto and away from the turntable.
5. Performing brake-tests.
6. Operating switches as needed.
7. Instructing Trainees.
8. Assisting in the boarding and detrainning of passengers.
9. Communicating to the Motorman where to make a Station Stop.
10. Communicating to the Motorman when the train is ready to depart after any stop.
11. Reporting any defects to the Shop Crew and/or the Motorcar Crew Chief.
12. Taking charge in any emergency situation. He must know emergency procedures and take appropriate actions including calling emergency services if necessary.

Motorman's duties include:

13. Following the instructions in this Handbook.
14. Working in a safe manner.
15. Being responsible for the operation of the Motorcar.
16. Inspecting both the interior and exterior of the Motorcar at the start of the day to check for anything that may cause an unsafe condition.
17. Performing maintenance on the Motorcar as needed.
18. Ensuring that the Motorcar is safe to operate throughout the day.
19. Operating the Motorcar in such a way as to provide the traveling public with a safe, comfortable and enjoyable ride.
20. Before storing the Motorcar at the end of the day, ensuring that sufficient fuel is available for the next day's operation.

Requirements: Sixteen hours as a Motorman/Conductor Trainee, recommendation by the Crew Chief and successful completion of the Motorcar Qualification Test. This will be followed by a 'practical factors' demonstration with certification of competence by the Road Foreman [Chris DeWitt] (or his designee). A Motorman/Conductor must be at least 18 years old.

In addition all positions require that the Crew Member have passed the NSRM Rule Book / Safety Test. Attendance at the annual Safety Meeting is required to maintain status as a Crew Member.

1.0 INTRODUCTION

This Motorman/Conductor's Handbook is intended to provide the basic information needed to perform the duties of a Motorman/Conductor.

The Motorman/Conductor duties must be learned and followed by all volunteers designated to be Motorman/Conductor.

The Frequently Asked Questions (FAQ) section and the descriptions of the equipment used by the NSRM Motorcar operation are provided in the Motorman/Conductor Handbook as information that might be of general interest to passengers. Motorman/Conductors should scan the material provided so that they know what information is available. Motorman/Conductors are encouraged to develop other information to share with passengers. Please be sure that all information provided is factual. If you don't know the answer to a question, try to obtain an answer from another member of the crew and be prepared to say, "I don't know" or "I'll try to find out" when necessary.

Appearance is important. Conductors must be neatly dressed and groomed.

You should at all times wear your volunteer's name badge.

It is preferred, but not mandatory, that Conductors be dressed in dark pants, white shirt, tie, vest, conductor's cap, and jackets or coats when required by the weather.

The Motorman/Conductor may also be dressed in the typical NSRM uniform:

a museum logo shirt, jeans or overalls, a railroader's cap and jackets or coats when required by the weather.

Footwear is an important factor in safety. Wear work boots/shoes with soles and heels firmly attached and heels that are not excessively worn. Suitable footwear around shops, tracks, and moving equipment does NOT include high-heeled boots or shoes, sandals, low quarter slip-on shoes or tennis shoes.

You should carry your NSRM Rulebook at all times while on duty.

2.0 SUMMARY OF MOTORMAN/CONDUCTOR'S DUTIES

The Motorman/Conductor has overall responsibility for the train and its operation. All persons on a train are subject to the Conductor's instructions. The protection of passengers, crew and trains is of the first importance and Conductors must not allow other duties to interfere therewith. The Conductor must be familiar with the contents of the reference documents.

It is the Conductor's responsibility to provide a safe and pleasant experience for the passengers. This is accomplished by making sure that the environment is safe, that all operations are performed safely, that the passengers behave in a safe manner, and that the passengers are reasonably comfortable and informed.

2.1 PRIOR TO FIRST RUN

It is the Conductor's responsibility to ensure that the following items are accomplished at the beginning of the day:

- A) Check for any General Orders that may be in effect and be sure that all crew members are prepared to comply with them.
- B) All doors through which any portion of the train will pass must be fully open to the maximum of their travel and secured with a keeper.
- C) The turntable must be aligned with the track occupied by the Motorcar.
- D) Once the Motorcar has been moved from the turntable, the turntable must be locked in place to keep unauthorized persons from moving it. (If the handcar is to be used it is recommended that the turntable be aligned for the handcar track.)
- E) Take control of the movement of the train as it taken to the depot for its first run of the day.*
- F) Prepare the train for passengers.

2.2 LOADING PASSENGERS

- A) Assist passengers onto the step and instruct them to hold the hand rail as they climb the steps.
- B) If a passenger might have difficulty negotiating the steps, offer to assist them, and offer use of the wheelchair lift for loading.
- C) If needed, assist other crew members in loading passengers requiring the wheelchair lift.
- D) Observe what people are carrying, and if consumables other than water are noted, inform the passengers that only water is allowed to be consumed aboard the train.
- E) Just before the train leaves, make sure that all passengers are safely seated.

*Note: For some tours it may be preferable to load passengers at the concrete platform near the sidewalk between the Interpretative Center and the Annex. Be certain that you have the portable step available to aid riders in boarding.

2.3 DURING THE RUN

The Conductor will determine that the passengers are safely aboard and the train is ready to depart. He will announce a clear “All Aboard” and will give a high-ball to the Motorman to permit the train to leave the station. At all times, he should stay aware of the operation of the train and observe Crew Members at their duties (especially if there are trainees in any of the crew positions), and maintain communication with the Motorman.

- A) Make sure that the passengers keep their arms and heads inside the car.
- B) Make sure that passengers are seated whenever the train is moving.
- C) Punch tickets for each rider. Inform the riders that the back of the ticket provides discounts both for Museum entry and for the Museum Store valid on the day it is sold.
- D) Talk to the passengers! *Encourage everyone to visit the Interpretive Center.* Provide the information outlined in Sections 3 & 4 below. If there are any questions you can't answer, see if you can find someone who can answer them.
- E) Make sure that all passengers follow the safety instructions as given in this handbook.

2.4 END OF THE RUN

As the train arrives at the depot, the Conductor will signal the Motorman for a safe stop and then assist passengers as they detrain.

2.5 OPERATING THE WHEELCHAIR LIFT

- A) The wheelchair lift is stored behind the door at the top of the ramp on the south end of the Wabuska Depot. The door can be opened from inside the depot.
- B) When the lift is needed, roll it down the ramp and position it opposite the side door of the Motorcar.
- C) Follow the directions printed on the lift itself. Be sure that the lift is located as closely as possible to the center of the opening on the car.
- D) Call on other crew members to aid the passenger safely onto and off the lift. Remember that the lift will be used to help the passenger to detrain as well.
- E) During the operating day, the wheelchair lift may be stored on the depot platform.

2.6 END OF THE DAY

Before the last run the Conductor will ensure that the wheelchair lift is put away and that all doors and windows at the Wabuska Depot are securely fastened and locked before the train is returned to storage. Generally Museum Staff will be the last to leave the depot and will close and lock the doors and windows but a member of the Motorcar Crew must check that this has been done.

- A) Check and, as needed, refill the fuel tank. (Be certain that there is enough fuel for the next day's operation – at least half a tank.)

***** Please, do NOT leave this job for the next crew! *****

- B) If the Diesel barrel is empty please notify the shop staff, buildings and grounds staff, and/or the crew chief.

C) Any door through which any portion of the train will pass must be fully open to the maximum of its travel and secured with a keeper.

- D) With signals from the Conductor, move the Motorcar into the annex building.

1. Place both Shift Levers in the Neutral Position.
2. Engage the Hand Brake.
3. Shut down the motor.
4. Store the keys on the hook.
5. Put the chain on the drive wheel closest to the Motorman position.
6. Open the valve and drain the Condensate Tank.
7. Make sure the Motorcar is clean.
8. Complete and sign the log.
9. Record your volunteer hours for the museum's records.

2.7 ELECTRONIC DEVICES

The Federal Railroad Administration has issued Emergency Order #26 regarding the use of electronic devices by train operating crews while on duty. Though our operation is not governed under rules of the FRA, adoption of this rule enhances safety of crews and passengers and as such is made part of our operating rules.

- A) These rules are effective when on a moving train, when duty requires any crewmember to be on the ground, when a crewmember is riding rolling equipment during a switching operation and when any other employee of the railroad is assisting with the preparation of the train.
- B) Hearing aids and digital watches are permitted.
- C) Personal electronic/electrical devices must be turned off with any earpiece removed from the ear. This includes, but is not limited to, cell phones, audio players and video players.
- D) Exceptions:
 - 1. In the event of an emergency or other problem the Conductor or his designee may use a cell phone to contact Emergency Services or museum staff. This cell phone should remain on but is to be for duty use only.
 - 2. These devices may be used while on a designated lunch break.
 - 3. As long as it does not interfere with the performance of their other duties crewmembers may take pictures using a digital camera.
 - 4. These devices may be used if all crewmembers have been notified that operations have been suspended.
- E) The Nevada State Railroad Museum does not supply any electronic/electrical devices for use during train operations.

2.8 BUILDING SECURITY

All buildings on the NSRM property must be secure at the end of each day.

- A) It is the responsibility of Museum Staff to lock the doors on the public restrooms as well as to close and lock the doors and activate the alarm at the Interpretive Center.
- B) Before the last run the Conductor will ensure that the wheelchair lift is put away and that all doors and windows at the Wabuska Depot are securely fastened and locked. Generally Museum Staff will be the last to leave the depot and will lock the doors and windows but a member of the Motorcar Crew must check that this has been done.
- C) The Conductor will ensure that the Annex Building is secure.
 - 1. The Turntable must be secured and padlocked when switching moves are complete.
 - 2. All overhead doors must be closed and the chain which operates each door secured with a keeper.
 - 3. The gate inside the building that separates the public area from the non-public area is to be closed, and if possible, latched.
 - 4. Check that the doors to the Archive Office area are closed and locked.

2.9 STANDARD CLOCK

The Standard Clock is in the Restoration Shop. This railroad runs on Pacific Time. The Standard Clock is set automatically via radio signal several times a day. You should adjust your watch to be within one minute of the Standard Clock. Conductors and Motormen should check their watches with one another as well as with the Standard Clock. Use of a digital watch is permitted.

2.10 EMERGENCIES

For all emergencies, it is the responsibility of the Conductor to determine the nature and severity of the emergency, to determine whether to call 9-1-1, to direct train crew actions, and to contact and coordinate with the Nevada State Railroad Museum staff and Emergency Services as needed.

PROCEDURES

A current copy of the Emergency Response Procedures should be available at all times. These procedures are intended to be strong guidelines, but be sure that common sense is used to interpret the intent of these procedures.

To aid in the interpretations, keep in mind that the order of priorities is:

- 1) Safety of Passengers and Crew first;
- 2) Equipment and railroad property second.

Emergency Responses are divided into six general categories:

- 1) Medical emergencies;
- 2) Fire (smoke);
- 3) Uncooperative passengers;
- 4) Obstruction problems;
- 5) Mechanical problems;
- 6) Observed (from the train) problems.

Know where a Fire Extinguisher is at all times.

Know where a First Aid Kit is at all times.

There should be a Fire Extinguisher and a First Aid Kit in the Motorcar and in the Freight House area of the depot as well as in the Annex. Check for them each day.

CONTACTING EMERGENCY SERVICES

Prior to the first run, the Conductor must determine the location of a telephone to be used for emergency calls. If the Conductor does not have a cell phone, it may be necessary to borrow one from a crew member if he needs to contact Emergency Services.

2.11 EXCEPTIONS

All of the above describe the regular activities of an ordinary day's operation. **There is never an ordinary day's operation.** Be prepared for changes in your work necessitated by safety concerns, a different routine (such as Santa Train or night operation), differing equipment or the needs of the museum.

BE FLEXIBLE

BE SAFE

3.0 FREQUENTLY ASKED QUESTIONS

Q. Where are the restrooms?

A. The restrooms are in the yellow building next to the parking lot and just south of the grade crossing. More restrooms are available in the Museum Interpretive Center.

Q. What time is the next Motorcar trip?

A. On most operating days the first Motorcar train leaves Wabuska Depot at 10:00 AM with departures every 30 minutes thereafter. The last scheduled train departs at 4:00 PM. Schedules/Timetables are available in the depot and in the Interpretive Center.

Q. What does it cost to ride the Motorcar?

A. Motorcar Rides: Adults (12 and older): **\$4.00**; Children (4-11): **\$2.00**; (under 6): **Free**
 Members of the Friends of the Nevada State Railroad Museum receive a
 50% discount on train rides.
Museum Admission: Adults (18 and older): **\$5.00**; Children (under 18): **Free**

Q. Where do you get tickets?

A. Tickets are available at the window in the Waiting Room at the north end of the Wabuska Depot.

Q. Did the V & T Railroad go to Truckee, California?

A. The Virginia and Truckee Railroad went from Virginia City (home of the Comstock Lode) to Carson City and north to the Truckee River (where Reno is located) and there connected to the Transcontinental Railroad. It did **not** go to Truckee, California. The V & T did have a branch that went to Minden to tap into the agricultural riches of the Carson Valley. That branch was built early in the Twentieth Century.

Q.

A.

4.0 INFORMATION ABOUT NSRM'S MOTORCAR EQUIPMENT

4.1 Tucson, Cornelia & Gila Bend Railroad Motorcar No. 401



Built in 1926 by the Edwards Railway Motor Car Company
Sanford, North Carolina

Original Cost: \$10,465.00
Weight: 23,000 lbs

The Tucson, Cornelia, and Gila Bend Railroad (TC&GB) served the community of Ajo, Arizona, home of the Cornelia copper mine. The car was constructed by the Edwards Railway Motor Car Company of Sanford, North Carolina.

No. 401 was typical of the doodlebugs that operated on many short line railroads and on branch lines of larger companies. These motorcars were a part of everyday life, but with the increase in personal automobiles and paved highways, the little motorcars have mostly been retired.

Car No. 401 operated between the Phelps Dodge copper mine at Ajo and the Southern Pacific connection at Gila Bend in southern Arizona. In 1943, the railroad replaced the original four cylinder Continental gas engine with a larger six cylinder White gas engine, moving the radiator forward in the process. After traveling over 780,000 miles, No. 401 was taken out of regular service on December 31, 1947. In the early 1950s the TC&GB donated the car to Travel Town in Los Angeles for preservation. Short Line Enterprises eventually acquired it in the early 1970s.

In 1976, the car was lettered Virginia & Truckee No. 50 Washoe Zephyr for a brief operating session on the V & T tourist railroad in Virginia City. The car was acquired by the Nevada State Railroad Museum in 1988 and operated with its White engine through 1996. A more efficient diesel engine was installed prior to operations in 1997 and a hydraulic drive replaced the 4-speed stick shift in 1999.

The name Washoe Zephyr would stay on the car until 1999. Prior to participating in Railfair '99 at the California State Railroad Museum, volunteers repainted and relettered the car as TC&GB No. 401. No. 401 operates from May through September on weekends when the steam train is not running, and for scheduled school tours.

4.2 Virginia & Truckee Railroad Motor Car No. 22



Built in 1910 by the McKeen Motorcar Company
Omaha, Nebraska
McKeen # 70
V & T # 22

The Virginia and Truckee Railroad (V&T) introduced its express passenger train between Virginia City and Reno in 1872. Caboose, which carried passengers on freight trains, provided accommodations at other times during the day. In 1906, the new branch line to Minden was completed. Passenger service was provided by a mixed passenger and freight train from Carson City.

It soon became apparent that additional passenger service was desirable. However, the addition of a steam train for exclusive passenger service was too expensive. As a result, in 1910 the V&T purchased a 70-foot gas powered McKeen motor car. This provided additional passenger service twice each day between Minden and Carson City. Passenger service was soon extended to Reno.

The McKeen Motor Car Company of Omaha, Nebraska was one of the most successful of the early motor car manufacturers. It was organized under the sponsorship of E. H. Harriman of the Union Pacific Railroad. The motor cars featured ultra-modern stressed-steel construction, dustproof porthole windows, and the distinctive knife-nosed wind-splitter front. They were available in standard 55 or 70-foot lengths.

The McKeen car was rebuilt in the company's shops in 1932, to create expanded mail and express space reflecting the reduction of passenger service on the line. The car was then placed in service between Reno and Minden and made one round trip daily. The car made its last run in September 1945.

In 1946, the body was sold and used as a diner. Al's Plumbing Supply in Carson City later acquired it for use as office space. In 1996, the McKeen motor car was donated by Al Bernhard of Al's Plumbing Supply to the Nevada State Railroad Museum where it has been restored to operating condition.

4.3 Wabuska Depot

Along with the U. S. Post Office, the two-story clapboard Commercial Hotel and J. M. Feeny's general merchandise store, the Southern Pacific station at Wabuska served as the hub of the modest settlement, located at the upper end of Mason Valley. Erected in 1906 by a crew of S. P. carpenters, the twenty-four by eighty-foot freight and passenger station replaced an earlier and smaller depot built by the Carson & Colorado Railroad. The single-story wood frame building served the predominately agricultural and mining region until Sept. 1, 1979, when the railroad closed the station.

Though not endowed with rich soils, Mason Valley was productive enough to prompt H. M. Yerington, President of the Carson & Colorado Railroad, to order a small freight and passenger station be constructed near the narrow gauge railroad's "first crossing of the Walker River" in 1880. Deposits of bluestone (copper sulfate) discovered and only partially developed by John Ludwig in 1870 didn't exactly prompt an immediate rush to the region until after 1900 when those ore bodies were more actively worked.

The mining boom brought about by the discovery of gold and silver at Tonopah and Goldfield immediately after 1900 did much to expand shipments of such indigenous agricultural products as hay, grain and potatoes from Mason Valley. The tremendous increase of freight out of Wabuska influenced the S. P. to replace the original C&C depot with a larger station in 1906. They also added a freight shed. This agricultural boom coupled with the highly active development of the bluestone deposits by the Nevada Douglas, Mason Valley and Bluestone mining companies soon led to the construction of several ore processing facilities. To economically transport the ore from the mines located in both Smith and Mason valleys, the Nevada Douglas Copper Co., the area's principal developer, surveyed and then contracted for the construction of a standard gauge railroad, starting at Wabuska, in 1909. The S. P., now the owner of the old C&C, in the meantime had broadgauged its line in 1906. Resembling a gigantic letter "J," the route of the Nevada Copper Belt Railway was completed to Ludwig three years and 37.8 miles later.

Soon after the NCB began service in 1912, the railroad's first three engines and cars were kept active hauling up to 750 tons of ore per day. Wabuska was indeed a bustling place as many freight teams arrived and departed daily to and from the smaller mining camps of Ramsey, Buckskin and others. Copper was *KING* – for a while – along with gold and silver. Then, as most mining booms seem to do repeatedly, in face of declining prices of metal, the economy hit the skids. The region suffered since the three major companies, i.e., Nevada Douglas, Mason Valley and the Bluestone mines constituted the principal sources of traffic for the NCB. There was a brief flurry of activity in the late 1910s and again in the 1920s.

According to historian David F. Myrick: "Passenger service on the NCB was both transient and ephemeral ..." except between Wabuska and Thompson (site of the Mason Valley Mill Co.'s huge smelter) where service could be considered normal. In addition to what little revenue was earned from hauling freight, the company's cashbook recorded an occasional picnic excursion from Ludwig as well as from the other end of the line at Wabuska and Yerington. The destination was Wilson's Canyon. The two Hall-Scott gasoline-powered motor cars often provided this service and on some occasions hauled "as many as three or four freight cars in addition to their human cargo."

Revenues continued to dip, prompting the owners of the Nevada Copper Belt to petition for abandonment. March 24, 1947 was the last day of operation. Apparently, business at Wabuska depot continued sufficiently until shortly before Sept. 1, 1979, when the Southern Pacific closed the seventy-three year-old structure. Following its gift to the Nevada State Museum in 1982, the eighty-foot long depot was moved intact to the Railroad Museum at Carson City in 1983. During the next four years, depending on time and funds, the depot underwent a complete renewal to reflect its appearance of the 1910s. Notwithstanding the addition of a number of mandatory safety features as well as a telephone and an electronic cash register, the Wabuska depot is back in business – serving as a busy railroad station once again.

WABUSKA DEPOT AT WABUSKA
AND
AT THE NEVADA STATE RAILROAD MUSEUM



(in Wabuska) Steve VanDenburgh 1978



(at NSRM in Carson City) Russ Tanner 2006

4.4 History of the Collections

The core of the Nevada State Railroad Museum's collection of historic locomotives and rolling stock exists as a consequence of western Nevada's economic boom-and-bust cycles and its geographic isolation. Flushed with high traffic and revenue from the Comstock in the 1870s and 1880s, the Virginia & Truckee Railroad bought state-of-the-art equipment. A second period of increased traffic following the Tonopah boom and the completion of a branch to Minden resulted in the purchase of more new equipment early in the 20th century.

Little modernization occurred in the lean years that followed. Meanwhile the large Carson City shop building protected the equipment from the elements. The company, which always needed cash, sold many old pieces to logging or industrial railroads. Enough remained, however, to attract movie scouts looking for authentic props when Hollywood entered its boom years in the 1930s.

In 1943 the State of Nevada acquired the first of its present collection of historic locomotives when Miss Hope Bliss gave the Carson & Tahoe Lumber & Fluming Company's *Glenbrook* to the Nevada State Museum.

Fortunately, just as Hollywood studios began to dispose of their props the Golden Spike Centennial of 1969 provided new roles for V&T No. 18, the *Dayton*, and No. 22, the *Inyo*. These 1870s locomotives portrayed Union Pacific **No. 119** and the Central Pacific's *Jupiter* – the locomotives that had been present when the gold spike was driven at Promontory Summit, and which were no longer extant. Paramount Pictures owned these V&T locomotives, which they loaned to the Union Pacific Railroad for the Centennial. Paramount subsequently agreed to loan the locomotives to the National Park Service for exhibit at Golden Spike National Historic Site until replicas of *Jupiter* and **No. 119** could be built.

A nationwide wave of interest in the past had followed passage of the National Historic Preservation Act of 1966 and crested with the American Revolution Bicentennial. In Nevada, the State sought acquisition of former V&T equipment during the late 1960s and early 1970s through the Nevada State Heritage Association and later through the Nevada State Museum. Out-of-state sales of the V&T *Reno* in 1968 and *Tahoe* in 1970 gave impetus to these efforts.

The V&T *Dayton* and *Inyo* were listed in the National Register of Historic Places on December 18, 1973. Four months later they were acquired by the State of Nevada, but they remained on exhibit at Golden Spike National Historic Site until November 9, 1978.

The State legislature had transferred management responsibility for Nevada's V&T collection to the Nevada State Park System on April 20, 1973. Nevada State Parks contracted in 1974 for an investigation into the feasibility of restoring the V&T equipment collection and in 1979 for a study to develop a plan for a state railroad museum. The latter year also saw the legislature create a Department of Museums and History to consolidate the State-operated museums and the Nevada Historical Society, and to create the Virginia & Truckee Railroad Museum.

On May 31, 1980—the 30th anniversary of the last run of the Virginia and Truckee—the new railroad museum was opened to the public at its present location on South Carson Street. The *Glenbrook* was transferred to it from the Nevada State Museum in 1981. On May 1 of that year, the *Glenbrook* also was listed on the National Register.

During the early 1980s a number of the pieces were restored by Short Line Enterprises operating under contract with the State. Locomotive No. 25 was under steam for Nevada Day 1980; flat car No. 162 and box car No. 1013 were completed in 1982; coach No. 9, box car No. 1005, and locomotive No. 22 *Inyo* were completed in 1983, the same year that the Wabuska depot was moved to the museum site and restored. On August 30, 1984 the depot was listed on the National Register. Coach No. 4 was restored in 1985.

Also in 1985, The Virginia & Truckee Railroad Museum was renamed the Nevada State Railroad Museum. Short Line Enterprises restoration and maintenance contracts concluded in 1987. Additional former-V&T rolling stock was purchased from Short Line Enterprises in 1988.

In 1993 Locomotive No. 27 was brought to Museum from Gold Hill. It was listed on the National Register on October 27, 2004. The Dayton, Sutro & Carson Valley Railroad locomotive *Joe. Douglass* was purchased in 1994 with a grant from Meadowood Mall of Reno. In 1996 the Bernhard Family Trust donated V&T No. 22, a McKeen self-propelled passenger car, to the museum. The car was listed on the National Register September 6, 2005.

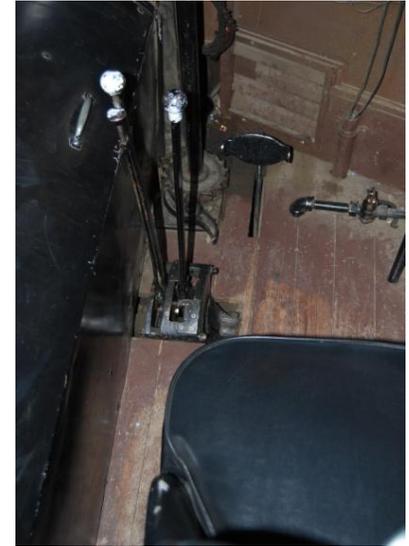
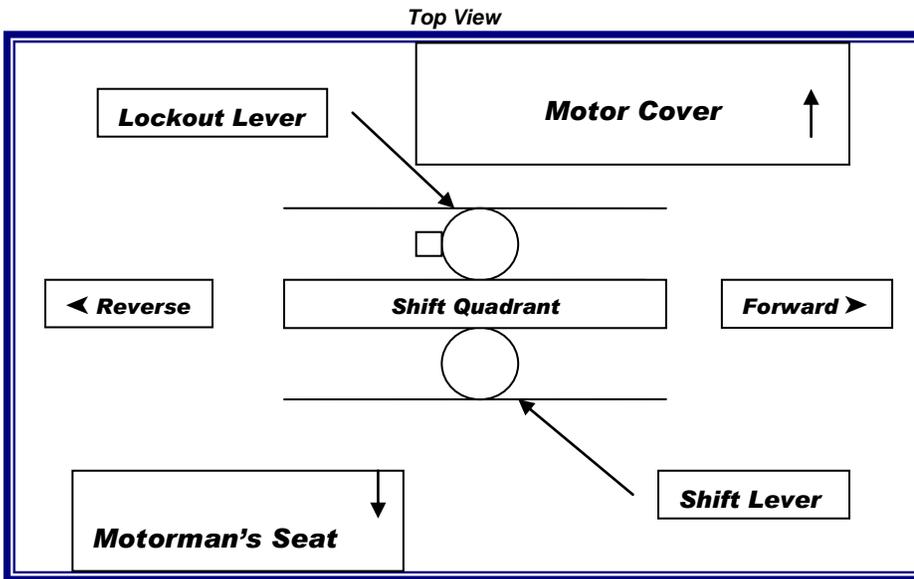
The Department of Museums & History was reorganized into the Department of Museums, Library & Arts in 1993. The Department was reorganized again in 2003, becoming the Department of Cultural Affairs. It includes the Division of Museums & History, of which the Nevada State Railroad Museum is an agency.

5.0 REFERENCES FOR FURTHER INFORMATION

Myrick, David F., Railroads of Nevada and Eastern California, Volume I: The Northern Roads, ISBN 0-87417-194-6, Copyright 1962, Reprinted University of Nevada Press 1992

Prentice, Bob, et al. Nevada State Railroad Museum Equipment Guidebook
Copyright 1999 Nevada State Railroad Museum

Shift Levers for the Motorcar's Hydraulic Drive



There are two control levers on the Motorcar: a 'Lockout' lever on the left and a 'Shift Lever' to its right.

To move the Motorcar always begin with both levers in the center 'Neutral' position.

First, move the 'Lockout Lever' to the end of the quadrant in the direction that you want to go. The 'Lockout Lever' has a latch that must be released before it is moved.

Once the 'Lockout Lever' has been latched into place move the 'Shift Lever' in the same direction. The 'Shift Lever' should be moved as far as it can go. It will then move sideways into a notch.

If there is any resistance move the levers back and begin again.

Once the brake has been released and the throttle advanced the Motorcar will move.

When the Motorcar has come to a complete stop, apply the Hand Brake.

Next, move the 'Shift Lever' to the 'Neutral' position.

Only then should the 'Lockout Lever' be unlatched and returned to the 'Neutral' position.

The sequence for moving the levers is important because if the levers are moved in the wrong order the mechanism can jam and prevent further operation of the Motorcar.

Braking Systems on T, C. & G. B. # 401

The 1926 Edwards Motorcar has Air Brakes. The primary brake system is called 'direct air.' This means that the brake controller takes air pressure directly from the air reservoir to the triple valve and then to the brake cylinder. (It is called "triple valve" for its three modes: Charging, Applying and Releasing.) The more pressure the greater the amount of brake force.

Unlike driving an automobile, the brakes are applied and released by hand rather than by using a foot pedal. There is a gauge for the brakes so the motorman can monitor the amount of pressure applied to the brake cylinder. The brake gauge also displays the main reservoir pressure.



There are four positions on the brake valve. The *Release* position bleeds off the pressure in the brake cylinder and releases the brakes. The *Apply* position allows air to flow from the reservoir to the brake cylinder and applies the brakes. The *Lap* position holds the application without adding or releasing pressure at the brake cylinder. The *Emergency* position puts all the pressure available directly to the brake cylinder. This will usually lock-up the wheels.

Generally, the pressure used to apply brakes is between 0-30 psi depending upon the degree of application that is needed under the circumstance. The rate of braking is varied by moving the valve to either the release or application position until the needed amount of braking is achieved, and the valve is returned to the lap position to hold the setting. Care must be taken to avoid sliding the motorcar wheels as the result of making an excessive application.



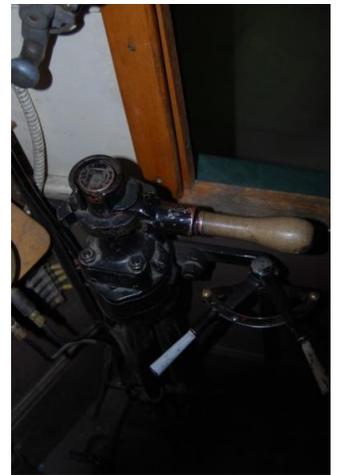
Release



Lap



Apply



Emergency

Railroad trains, whether a mile-long freight, a single locomotive or this Motorcar, do not stop quickly. You will need to anticipate the need to stop, apply the brakes, and return your attention to what is happening around you.

The Motorcar has an air pump mounted to the motor. The air pump charges two air tanks (the reservoir) mounted under the frame at the rear of the motorcar. A pressure limiting valve between the two rear tanks prevents the pressure from rising above 75 psi. Several appliances operate from the stored air pressure: the Bell, the Whistle and the Brake system.

The brake system has a gauge with two hands on it. One hand (Red) shows how much pressure is available in the system and the other (White) shows how much pressure is being applied to the brakes. Maximum pressure is 75 psi, but there is likely to be less air pressure available after repeated brake use or the use of the bell and/or whistle.

There are four positions of the handle on the brake controller:

The Release position (all the way forward) exhausts air from the brake cylinder releasing the brakes as well as permitting the pump to recharge the reservoir.

The Lap position (centered between *Apply* and *Release*) on the brake controller will hold the pressure steady in the brake cylinder. It retains the pressure that is set at the time that the handle is moved from *Apply* or *Release*. The *Lap* position enables you to set a specific brake pressure and then to hold it without continuing to increase the pressure and inadvertently going all the way into emergency braking.

The Apply position (toward the rear) allows you to put a specific amount of air pressure into the brake cylinder. As long as the handle is in the *Apply* position the pressure in the brake cylinder will continue to increase - producing more and more braking. You should apply the needed amount of brake air, and then quickly move the controller handle into the *Lap* position.

The Emergency position (all the way back) puts all of the available air pressure into the brake cylinder. At 75 psi this will lock the wheels and the car will slide. Sliding the wheels is not a good thing. However, when it is necessary to use emergency braking don't hesitate, use it.

When you need to brake, pull the handle into the *Apply* position. When the desired amount of pressure is shown on the gauge, immediately put the handle into the *Lap* position. This will keep the brake pressure from increasing. If you need more pressure, momentarily use *Apply* and return to *Lap* when the pressure is correct. And, conversely, you can decrease pressure by momentarily moving the handle to *Release* and back to *Lap*. It does not take long for the pressure to change but it may take a while for you to notice a change in the motorcar's response.

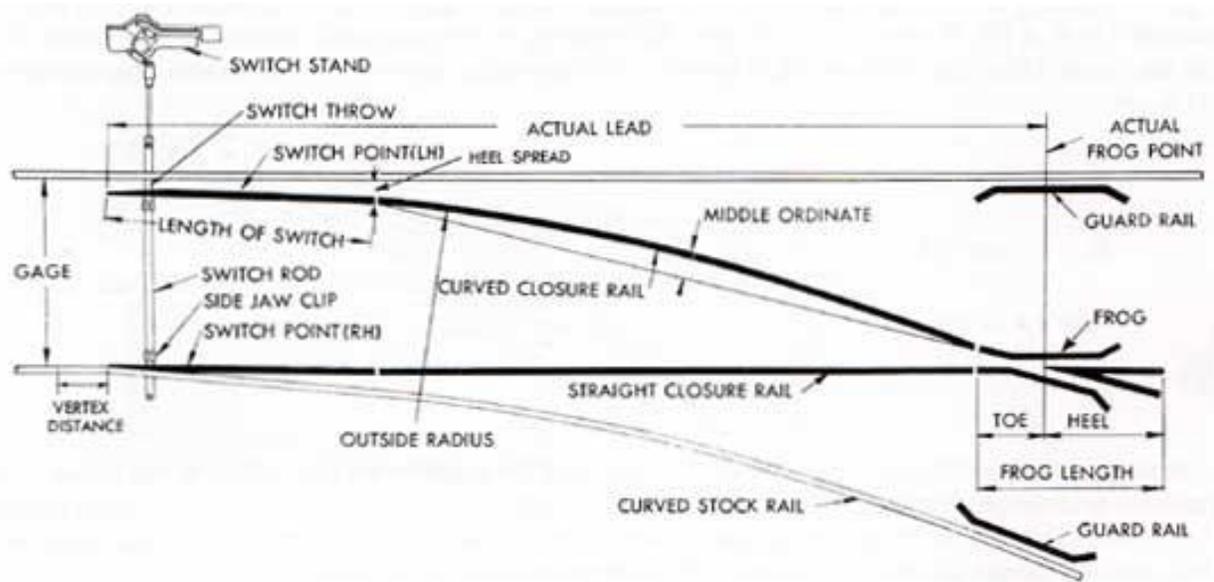
Even at idle the motor produces a lot of power, so it may help if you move the shifter to its neutral position when you are coming to a complete stop.

If the air pressure is too low to be effective – use the Hand Brake.

Be sure to watch for signals or obstacles and perform your other duties (such as blowing the whistle, ringing the bell or applying further braking) as required. Don't let concentration on the brake pressure gauge keep your attention away from safe operation of the motorcar!

Release the brakes completely before pushing on the throttle. It is poor practice to try to accelerate the car while the brakes are applied.

STANDARD COMPLETE TRACK SWITCH



Definitions:

FACING POINT MOVE: To proceed through a switch from the point end toward one of the connecting tracks.

TRAILING POINT MOVE: To proceed through a switch from the frog end toward the points of the switch.

PICK A POINT: To have a wheel flange run into a switch point when making a facing point move.

RUN THROUGH A SWITCH: To make a trailing point move when the switch is thrown for the other track route.

A train approaching from the *left* side of this diagram is making a 'facing point' move over this switch. A train coming from either of the *right* side approaches is making a 'trailing point' move over this switch.

If the switch is thrown for the curve and a gap is present between the switch point on the outside of the curve and the straight stock rail, the flange of an engine or car wheel can 'pick the point' of the switch as the train approaches the switch from the facing point. A metal casting can be applied to the rail in front of the switch point in an attempt to prevent the picking of the switch point. Switch Point Protectors increase the service life of switch points by absorbing the impact of passing car wheels. The protector momentarily deflects the wheel flange so it misses the tip of the switch point. The protector is bolted to the inside of the straight stock rail leading into the switch. At NSRM Switch # 1 and Switch # 8 are good examples of this in practice.

If the switch is thrown to permit a train to pass through from one of the two trailing point directions and the train approaches from the other of those directions it will 'run through' the switch. In the illustration above, with the switch thrown as is indicated, a train approaching from the curved (lower) leg of the switch would 'run through' the switch. Often running through a switch will result in the derailment of all or part of the train. It may also damage the Switch Stand.

Under NO circumstances should a switch be thrown while a train is passing over it.

As you approach any switch, always be certain that you know which way it is thrown.

A Few Notes About NSRM's Track Nomenclature

(See the maps on the next pages.)

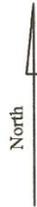
1. The track between Switch #1 and Switch #4 is 'The Curry Street Line.'
2. The track between Switch #4 and the End of Track is 'The Hole.'
(Be sure to read and observe the warning on the sign at the end of track.)
3. The circle of track from Switch #1 past Switch #8 and on to Switch #1 is 'The Loop.'
4. The track between Switch #2 and the back of the Annex is the 'B Line.'
5. The track between Switch #3 and the Turntable is the 'A line.'
6. The track between Switch #4 and Switch #8 is the 'Depot (or Station) Track'

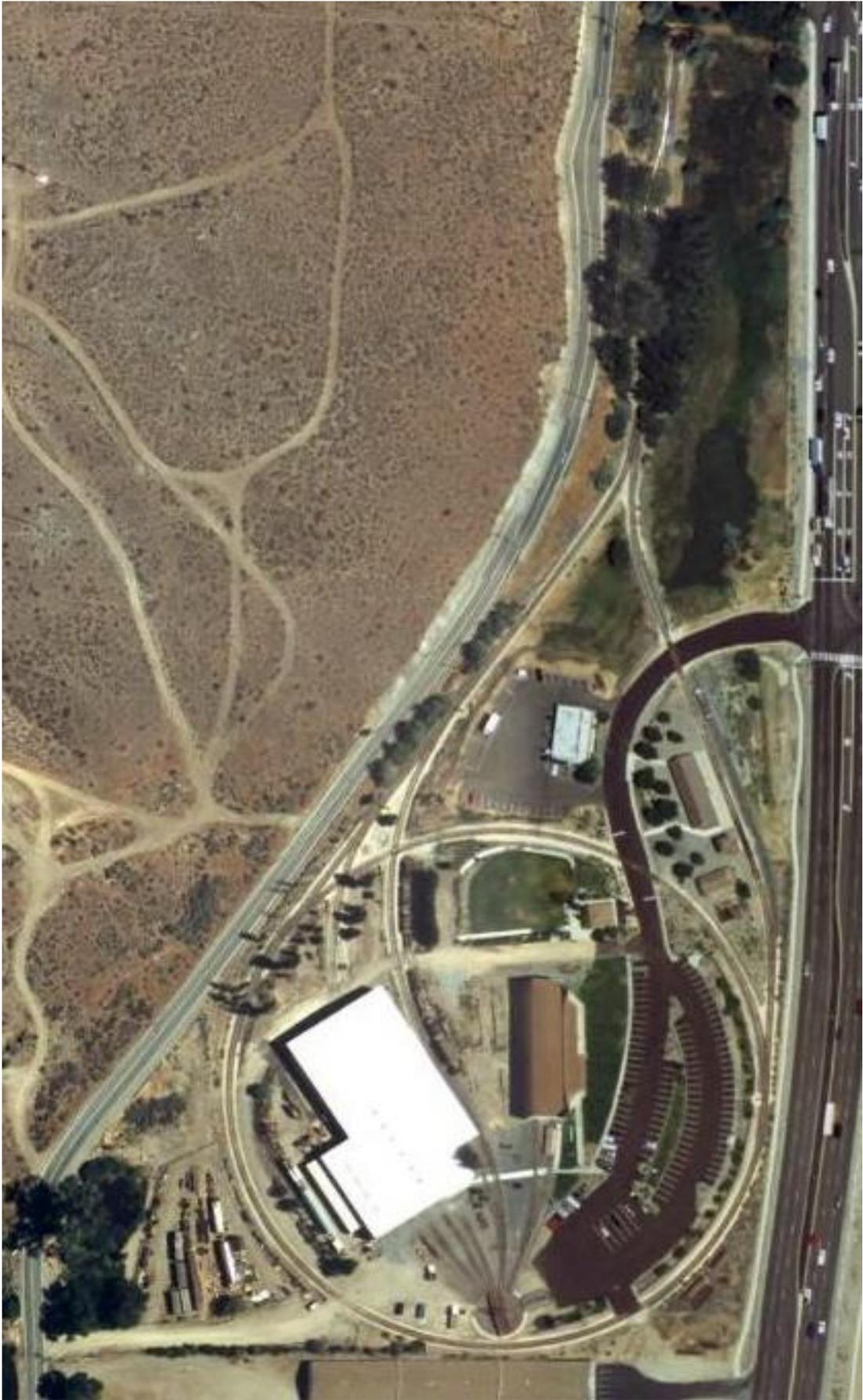
Switch Numbers and Names

1. Switch #1 is the 'Curry Street Switch.'
2. Switch #2 is the 'B Line Switch.'
3. Switch #3 is the 'A Line Switch.'
4. Switch #4 is the 'Democrat Switch.'
5. Switches #5 & #6 are the 'Passing Siding Switches.'
6. Switch #7 is the 'Station Siding Switch.'
7. Switch #8 is the 'Loop Switch.'
8. Switch #9 is a 'Stub Switch' and uses a 'Harp Switch Stand.' It joins the two tracks leading into the Interpretive Center. At this switch you really are "Bending the Iron."
9. Switch #10 leads to the 'A Line Siding' and is seldom used.
10. Switch #11 is a narrow gauge switch and leads into the narrow gauge storage area. Watch this switch, if it is thrown the wrong way, it will put any standard gauge equipment on the ground.
(This is NOT a good thing.)

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Numerals in circles are switch numbers





CHECKLISTS

The following checklists are extensive. They cover most of the items you should look at as you use the short checklist form provided in the Motorcar binder.

BEFORE YOU START THE MOTORCAR

CHECKLIST

1. Check for any General Orders that may be in effect. *
2. **Open the Annex Door all the way !!!!**
(Failure to do this has caused more damage to the Motorcar than any other single factor.)
3. Check Radiator Coolant
4. Check under the Motorcar for obstructions, leaks, etc.
5. Check the Front Truck and Brake systems
6. Check underside of car for loose or hanging parts
7. Check the Rear Truck and Brake systems
8. Check Air Tanks and Valves (Including the Conductor's Valve)
9. Check Back Platform and Steps (Remove the "Do Not Climb" signs)
10. Check that the Portable Step is in the Motorcar (This is the red step with the number '401')
11. Check Drive components
12. Check exterior appearance
13. Check and close Condensate Tank valve
14. Check the previous log entries to see if there is anything you should know
15. Check Engine Oil (Optional, but a good idea especially if oil leakage is observed under the car)
16. Record Hour Meter numbers on log (does it match the previous entry?)
17. **Check that the Annex Door is fully open**
18. Check the Hand Brake

*General orders are posted just inside the Restoration Shop door and are also available on the Friend's website
www.nsrn-friends.org/nsrm141.html

MOVING THE MOTORCAR FROM ANNEX

CHECKLIST

1. Check that both Shift Levers are in the Neutral position and the Hand Brake is engaged
2. Start the Motor
3. Wait for the Air Pressure to rise to at least 50 psi
(If you wish you can move the Motorcar out of the building using the Hand Brake and pump up the air reservoir outside the building. This does help to keep the air in the annex cleaner.)
4. **Check that the Annex Door is fully open**
(It has happened that someone else has lowered the door while the Motorcar crew was otherwise busy.)
5. Remove the Chain from the wheel
6. Upon signal from Conductor, release the brake and move the Motorcar out of the annex
7. Move the Motorcar beyond the sidewalk but do not foul any other tracks
8. Secure the Motorcar with Hand Brake and Chain
9. Check fuel level (Add fuel if needed)
10. Check all lights
11. Clean interior, exterior and windows of the Motorcar
12. Build Air Pressure to 70 psi

MOVING THE MOTORCAR ONTO AND OFF THE TURNTABLE

CHECKLIST

1. **Align the Turntable with your track**
2. **Ensure the Air Pressure is at least 50 psi**
3. **Remove Chain and release Hand Brake**
4. **Upon signal from Conductor, move the Motorcar to the Turntable**
5. **Make a full-stop Air Brake test *before* moving onto Turntable**
6. **Move carefully onto Turntable and stop when Turntable is balanced**
7. **Apply Hand Brake and align Turntable with the correct track**
8. **Move Motorcar carefully from Turntable**
9. **Lock the Turntable so that the public cannot rotate it**

END OF THE OPERATING DAY

CHECKLIST

Before moving Motorcar into Annex:

1. Check fuel level and if needed refill the Fuel Tank
(Be certain that there is enough fuel for the next day's operation – at least half a tank.)

*****Please, do NOT leave this job for the next crew!*****

2. If the Diesel barrel is empty please notify the shop staff, buildings and grounds staff, and/or the crew chief.

Moving the Motorcar into the Annex:

3. Check that the Annex Door is fully open
4. With signals from the Conductor, move the Motorcar into the annex and stop
5. Place both Shift Levers into the Neutral Position
6. Engage the Hand Brake
7. Shut down the motor
8. Store the keys on the hook
9. Put the chain on the drive wheel closest to the motorman position
10. Open the valve to drain the Condensate Tank
11. Make sure the Motorcar is clean
12. Complete and sign the log
13. Record your volunteer hours for the museum's records.

<u>Date:</u>	Description		
4/12/2006	Original Release		
8/22/2009	Revised Release	Published to Website	
9/10/2009	Revised Release	Document Number added	Electronic Devices
3/1/2010	Revised Release	Standard Clock	2010 Revision

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