

NEVADA STATE RAILROAD MUSEUM

CARSON CITY, NEVADA



STEAM TRAIN CREW MANUAL

2010

INTRODUCTION

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Welcome to the Nevada State Railroad Museum's Steam Train Crew.

This Steam Train Crew Manual includes Handbooks defining each Crew Member position. Each handbook gives a description of the position and its duties as well as the requirements that must be met for a person to be considered as qualified in that job. There are minimum age requirements and Qualification Tests for all positions. Both satisfactory performance and specified hours of experience are required before training is started for advancement to a new position.

You should find most of the information you need to successfully perform as a member of the Steam Train Operating Crew in this manual. However, some of what you need to know can be learned only by on-the-job training and experience.

All volunteers must be members in good standing of The Friends of the Nevada State Railroad Museum.

STEAM TRAIN CREW POSITIONS

Car Attendant

Brakeman

Conductor

Fireman

Engineer

Hostler Helper

Hostler

Crew Chief

To become a Crew Member, you must have passed the NSRM Rule Book / Safety Test.

Attendance at the annual Safety Meeting is required in order to maintain status as a Crew Member.

Please note that for a long time railroading was a male dominated profession. Railroading's language and terminology reflect that fact. However this no longer applies, so any references to 'he,' 'him,' 'man,' etc. in this document are not gender specific. Both men and women are welcomed and encouraged to become members of our train crews.

Remember

**SAFETY
IS THE
#1
PRIORITY**

Developing good work habits is important:

Never take shortcuts.

Follow Safe Work Practices.

Avoid personal injury.

STEAM TRAIN CREW MANUAL

This Steam Train Crew Manual has been assembled to provide a guide for training volunteers in the various positions on the Nevada State Railroad Museum's Steam Train Crew. It outlines the jobs that people in each position should know, acts as a reminder of many of the things that may have been missed in the training that has occurred in the past, and serves to specify items that really should be covered but often are forgotten because they have not been a recent problem. If a volunteer is to be fully trained, he (or she) should be taught everything that others are taught and this manual is a start at putting these things in writing so that none are omitted.

Each of the Handbooks that make up this manual have had additional material added that should help make the volunteers more knowledgeable. This includes information about the museum and its collections, descriptions of the locations and operation of track switches, as well as background information about the operation of Air Brakes and the firing and handling of steam locomotives.

I have used a variety of sources in producing this manual. Much has been found on the Internet, a great deal has come from the manuals prepared by Roger Himka for the Nevada State Railroad Museum's Nevada Southern operation, and Bill Kohler has written material for the Fireman position. He is continuing to write the manuals for the Engineer and Hostler Helper positions. Chris DeWitt provided drawings and maps for portions of this manual. Photos come from my collection.

I am in debt to the above mentioned individuals as well as to many others for their contributions. My thanks go to all of them. All errors, of course, are my own. I hope my readers will point them out for me to correct so that they will not be perpetuated.

Russ Tanner
Carson City, August 2009

MISSION STATEMENTS

Nevada State Railroad Museum

The Nevada State Railroad Museum is a cultural resource dedicated to educating visitors and the community about Nevada railroad history. This mission is accomplished through the collection, preservation, and interpretation of significant locomotives, rolling stock, artifacts, photographs, and memorabilia directly related to railroads and railroading in Nevada. In addition to static exhibits, select pieces of equipment in the collection are restored and operated throughout the year to demonstrate steam and early internal-combustion technology and provide visitors first hand experience with railroad history through the sights, sounds, and sensations of a train ride.

Friends of the Nevada State Railroad Museum

The specific and primary purposes for which this corporation is organized and operated are to establish a perpetual trust fund to assist in the support of the Virginia & Truckee Railroad Museum or the Nevada State Railroad Museum as it may henceforth be known together with any other Nevada State Museum Railroad property, events, or activities reasonably related thereto, all within the purview of Section 501(C) (3) of the Internal Revenue Code of 1954 as it may be amended from time to time.
Articles of Incorporation, Section 2(a).

The Friends of the Nevada State Railroad Museum supports the operation of the Nevada State Railroad Museum (Carson City) by providing a trust fund to assist with the monetary needs of the museum and by providing volunteers to aid in the operation of the museum's activities, events and programs.

The Core Message of The Nevada State Railroad Museum

“The railroads of Northern Nevada enabled settlement and the rapid, profitable exploitation of resources in a hostile environment.”

JOB DESCRIPTIONS
AND
DUTIES

Car Attendant

Description: Car Attendants are volunteers whose primary responsibility is to assist the Conductor in the “management” of passengers aboard operating trains. They will familiarize themselves 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. Car Attendants will assist with cleaning of cars, as needed, and be available for cursory equipment inspections. Car Attendants will be assigned to a car by the Conductor, and shall ride the car on each trip and remain near the car when the train is in the station. They are expected to observe the operations of other members of the train crew in order to prepare for advancement. They are directly responsible to and shall receive directions from the Conductor.

Car Attendants duties include:

1. Attending the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Car Attendant’s Handbook.
3. Being responsible to and taking direction from the Conductor.
4. Assisting in the boarding and detraining of passengers.
5. Monitoring their assigned car to ensure that passengers are riding in a safe manner.
6. Ensuring that passengers remain seated at all times that the train is moving.
7. Communicating with the passengers during the run.

Requirements: Sixteen hours as a Car Attendant Trainee and successful completion of the Car Attendant Qualification Test. A Car Attendant must be at least 16 years old.

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.

Brakeman

Description: Brakemen are volunteers whose primary responsibility is to assist the Conductor in the safe operation of trains. They must be proficient in giving hand signals (day and night) and will operate switches, couple and uncouple cars, make air line and brake tests, and assist the conductor in any way to assure safety in the operation of the train. Brakemen will be familiar with proper equipment operation and assist in the on-going inspection of cars. During the operation of the train they will also act as car attendants whenever possible. They are expected to observe the operations of other members of the train crew in order to prepare for advancement. They are directly responsible to and shall receive directions from the Conductor.

Brakeman's duties include:

1. Attending the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Brakeman's Handbook.
3. Being responsible to and taking direction from the Conductor.
4. Assisting in the boarding and detraining of passengers.
5. Operating the wheelchair lift.
6. Monitoring their assigned car to ensure that passengers are riding in a safe manner.
7. Ensuring that passengers remain seated at all times that the train is moving.
8. Communicating with the passengers during the run.
9. Giving clear hand or lantern signals.
10. Operating switches.
11. Coupling and Uncoupling cars.
12. Performing brake-tests.
13. Filling the tender tank with water.
14. Riding the leading car during moves where the locomotive is pushing the train and communicating proceed or stop signals to the engineer.

Requirements: Sixteen hours as a Car Attendant, followed by thirty hours as a Brakeman Trainee, recommendation by an active Conductor and successful completion of the Brakeman 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 Brakeman must be at least 18 years old.

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.

Conductor

Description: The 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. Conductors shall be responsible for seeing that trains operate on schedule and that adequate and responsible personnel are on hand to carry out such operations. Conductors are responsible for supervising the members of the Train Crews assigned to them, assuring that they perform their duties efficiently, safely and courteously.

Conductors will be familiar with proper equipment operation. They are expected to observe the operations of other members of the train crew in order to prepare for advancement.

Conductor's duties include:

1. Presenting the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Conductor's Handbook.
3. Working in a safe manner.
4. Being responsible for and giving direction to Crew Members.
5. Directing the Engineer in moving the locomotive onto and away from the turntable.
6. Inspecting the outside of the train at the start of the day to check for anything that may cause an unsafe condition. This inspection may be assigned to and performed by an experienced Brakeman. However, the Conductor remains responsible for this inspection.
7. Performing brake-tests.
8. Assigning experienced Crew Members to instruct Trainees.
9. Assigning Crew Members to Car Attendant positions and as Switchmen.
10. Ensuring that Crew Members know, and perform, their assigned duties.
11. Assisting in the boarding and detraining of passengers.
12. Communicating to the Engineer where to make a Station Stop.
13. Communicating to the Engineer when the train is ready to depart after any stop.
14. Taking charge in any emergency situation. He must know emergency procedures and take appropriate actions including calling emergency services if necessary.

Requirements: Thirty hours as a Brakeman, followed by thirty hours as a Conductor Trainee, recommendation by the Training Conductor after completing the training in a satisfactory manner as well as successful completion of the written Conductor Qualification Test. The Road Foreman (or his designee) will then schedule two (2) complete days of observation and testing with the Crew Member before any decisions are made on certification. The decision to certify or not to certify will be made jointly by the Road Foreman (or his designee) and the Crew Chief. If the Crew Member should not be certified he will be given the reasons for that decision. After further training and with the recommendation of the Training Conductor, the Crew Member may request that he be rescheduled for observation and testing. Notice of any decertification will be given in writing. A Conductor must be at least 21 years old.

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.

In addition to the items described in this manual, a candidate for the position of Conductor, Fireman or Engineer must also demonstrate over time that he is always aware of the operating environment of the museum and that he consistently exercises good judgement about the needs of the public, the needs of the train crew, the operation of the train, and the importance of safety. The Road Foreman (or his designee) and the Crew Chief must make this subjective evaluation and both must agree to the promotion of a candidate to any of these positions.

Fireman

Description: The Fireman is a volunteer who will fire the engine in a safe, responsible manner while inside or outside of the yard limits. The Fireman will maintain adequate steam pressure for the operation of the engine. The Fireman shall at all times assure that an adequate amount of water is in the boiler for safe operation and the tender is sufficiently filled with water and fuel. The Fireman will work with the Engineer to ensure the safety of the public at all times during operation of the train. This includes watching crossings for vehicular and foot traffic, and ringing the bell at the appropriate times. Firemen shall familiarize themselves with the use of the engine and train brake controls for their use in emergency situations. They are expected to observe the operations of other members of the train crew in order to prepare for advancement. They are directly responsible to and shall receive directions from the Engineer and Conductor.

Firemen's duties include:

1. Attending the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Fireman's Handbook.
3. Being responsible to and taking direction from the Engineer and the Conductor.
4. Passing on signals to the Engineer from the Conductor or other Crew Members.
5. Assisting with proper lubrication of the locomotive.
6. Protecting the locomotive under his charge from damage, carelessness, mishandling and any mechanical or safety failure.
7. Monitoring fuel and water levels.

Requirements: Thirty hours as a Conductor, followed by thirty hours as a Fireman Trainee, recommendation by the Crew Chief and successful completion of the Fireman 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 Fireman must be at least 21 years old.

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.

In addition to the items described in this manual, a candidate for the position of Conductor, Fireman or Engineer must also demonstrate over time that he is always aware of the operating environment of the museum and that he consistently exercises good judgement about the needs of the public, the needs of the train crew and the importance of safety. The Road Foreman, the Crew Chief and the Practical Factors Examiner must make this subjective evaluation and all must agree to the promotion of a candidate to any of these positions.

Engineer

Description: The Engineer is a volunteer who, without supervision, will be able to control the operation of a locomotive and handle a train, and respond to potential problems at any time. The Engineer is in charge of the Engine Crew for the shift to which he is assigned. The Engineer is responsible for the safe operation of the locomotive to which he is assigned and, with the Conductor, for the safety of the entire train. The Engineer is responsible to, and shall receive instructions from the Conductor relative to the overall operation of the train. The Engineer shall be responsible for the inspection of the engine's condition and shall assure the equipment is in a safe operating condition at all times. The Engineer shall oversee the performance of the Fireman and shall be responsible for assuring the safe and effective performance of duties by the Fireman. The Engineer shall be responsible for the safety of persons and property on or near the train and shall operate the train in a way that assures such safety. The Engineer serving the last shift of the day shall prepare an Equipment Report on the mechanical status of the engine and cars in his charge.

Engineer's duties include:

1. Attending the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Engineer's Handbook.
3. Being responsible to and taking direction from the Conductor.
4. Safely operating the locomotive.
5. Assisting the Fireman with firing and boiler management as needed.
6. Protecting the locomotive under his charge from damage, carelessness, mishandling and any mechanical or safety failure.
7. Having final authority over persons riding in the cab of the locomotive.

Requirements: Thirty hours as a qualified Fireman, followed by thirty hours as an Engineer Trainee, recommendation by the Crew Chief and successful completion of the Engineer Qualification Test. This will be followed by a 'practical factors' demonstration with certification of competence by the Road Foreman [Chris DeWitt] (or his designee). An Engineer must be at least 21 years old.

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.

In addition to the items described in this manual, a candidate for the position of Conductor, Fireman or Engineer must also demonstrate over time that he is always aware of the operating environment of the museum and that he consistently exercises good judgement about the needs of the public, the needs of the train crew and the importance of safety. The Road Foreman, the Crew Chief and the Practical Factors Examiner must make this subjective evaluation and all must agree to the promotion of a candidate to any of these positions.

Hostler Helper

Description: A Hostler Helper is a volunteer who is an assistant to the Hostler. He is responsible to and assists the Hostler with anything needed or requested in the preparation of locomotives and equipment for operation. The Hostler Helper may be responsible for oiling car journals, putting in boiler plugs, washing engines, checking for loose, damaged or missing components of the equipment. The Hostler Helper shall observe and learn the tasks of the Hostler. He is directly responsible to and shall receive directions from the Hostler, Fireman and Engineer.

Hostler Helper's duties include:

1. Attending the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Hostler Helper's Handbook.
3. Being responsible to and taking direction from the Hostler and/or the remainder of the Engine Crew.
4. Wiping down the locomotive before the first trip of the day.

Requirements: Qualification as a Brakeman or above, eight hours as a Hostler Helper Trainee under the supervision of an Engineer or Fireman and with the approval of both the Crew Chief and the day's Hostler. A Hostler Helper must be at least 18 years old.

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.

Hostler

Description: A Hostler is a volunteer who prepares a locomotive, from pulling it out of the building to “Ready-To-Run,” in a timely manner without needing supervisory help from others. The Hostler is responsible to and under the supervision of the Road Foreman, or in his absence, the Engineer assigned to the first shift of the day. The Hostler shall see that his locomotive is properly inspected, lubricated, fueled, filled with water and sand, and adequate air brake and steam pressure are made up for operation in a safe, timely manner. The Hostler shall be responsible for the safe operation of the engine until the assigned road crew comes aboard and the Engineer accepts the engine. In most cases the Hostler(s) will be the Engineer and/or Fireman assigned to the first shift of the day. The Hostler shall also supervise all Hostler Helpers and other individuals assisting in the preparation of the equipment under his jurisdiction.

Hostler’s duties include:

1. Attending the daily pre-operation Safety Briefing.
2. Following the instructions in the NSRM Hostler’s Handbook.
3. Being responsible to and taking direction from the Road Foreman.
4. Supervising those assisting in the preparation of the locomotive.

Requirements: The Hostler must be a qualified Fireman or Engineer.
A Hostler must be at least 21 years old.

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.

Crew Chief

Description: The Crew Chief is a volunteer, under the authority of the Road Foreman, who is responsible for all Steam Train operations at NSRM. He maintains the roster of all crew members and their qualifications, schedules them for each day's operation, and ensures that an adequate crew is available whenever the steam train is operated.

Crew Chief's duties include:

1. Being responsible to and taking direction from the Road Foreman.
2. Following the instructions in the NSRM Crew Chief's Handbook.
3. Assisting the Road Foreman in presenting the annual Safety Meeting(s).
4. Recommending crew members for advancement to Conductor, Fireman or Engineer positions.
5. Ensuring that Crew Members are trained and certified for the jobs to which they are assigned.
6. Maintaining the roster of qualified Crew Members.
7. Scheduling crew members for all Steam Train operations.

Requirements: The Crew Chief is appointed by the museum's Road Foreman.

The Crew Chief must be at least 21 years old.

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.

Crew Position Qualification Requirements

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.

Each position has a minimum age requirement, a minimum number of recorded hours in the previous position, followed by a minimum number of training hours, recommendation by a specified member of the crew and a written and/or practical factors test. The chart below shows those requirements.

Position	(Minimum) Age	Hours Recorded in Previous Position <i>(in addition to Training Hours)</i>	Training Hours	Recommendation by	Testing*
Car Attendant	16	N/A	16	Conductor	Being developed <i>(Road Foreman or Designee)</i>
Brakeman	18	16	30	Conductor	Being developed <i>(Road Foreman or Designee)</i>
Conductor	21	30	30	Crew Chief and Training Conductor	Two Day Practical Factors <i>(Road Foreman or Designee)</i>
Fireman	21	30	30	Crew Chief	Being developed <i>(Road Foreman or Designee)</i>
Engineer	21	30	30	Crew Chief	Being developed <i>(Road Foreman or Designee)</i>
Hostler Helper	18	Qualification as Brakeman	8	Crew Chief and assigned Hostler(s)	
Hostler	21	Qualification as Fireman/ Engineer	N/A		
Crew Chief	21	N/A	N/A	Appointed by Road Forman	

*Most Written & Practical Factors Tests are still under development and will be instituted when completed.

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

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