

Remote Control Rules Overview

This document defines the operating rules for all locomotives, railcars, and speeders ("equipment") that uses remote control operation on any track of the Adobe Western Railroad.

Remote control being defined as such: No cable connecting the control box or panel to the equipment being operated is in use. The equipment being controlled is done by communication via radio frequency commands between the radio transmitter and the equipment being controlled. The commands can be transmitted by any means possible.

The goal of these rules is to provide safe operating conditions when using radio control of the equipment. All failure conditions must be addressed so they do not present a possibility of personal injury to the operator or any person in the area of the remote control operation.

Maricopa Live Steamers shall notify the RC Airpark that there is the possibility of trains operating by remote control any time during the year.

Failure Modes of Remote Control Equipment

There are two modes of failure with a radio control system listed.

- A. Loss of transmitter (either total loss with transmitter batteries going dead or partial loss where the radiated power has been reduced, therefore limiting the range of the signal for proper operation of the receiver).
- B. Loss of receiver (either a hard hardware failure of the receiver or loss of power in the receiving circuitry)

The installed system must be able to comply with the requirements listed below.

Requirements for Remote Control Equipment

1. The maximum speed of the remote controlled equipment shall be limited to yard speed per Rule 532 when switching inside yard limits in remote control mode (operator not riding on equipment). During operation on the "mainline", the speed shall be governed by Rule 532 (operator riding on equipment).
2. For equipment verification on the Adobe Western (MLS) the equipment must not pass one mile (165 feet) faster than 20 seconds.
3. For equipment verification on the Adobe Western (MLS) the equipment must stop in a reasonable and prudent distance after loss of transmitter or receiver.

4. For equipment verification on the Adobe Western (MLS) the equipment must have a master on/off switch to disable the remote control circuitry readily accessible so that runaway equipment can be stopped safely before damage or injury occurs.
5. For equipment verification on the Adobe Western (MLS), the minimum distance the remote control system can control the equipment shall be the distance of approximately 165 feet (one mile).
6. For equipment verification on the Adobe Western (MLS), the equipment shall have direction control, horn, and speed control as a minimum. Optional equipment would be a flashing beacon on roof of equipment visible from all angles. For night operation, the equipment shall have a headlight for forward and reverse operation.

Equipment verification Checklist

1. Verify master switch location and operation
2. Verify transmitter fail operation and distance
3. Verify receiver fail operation and distance
4. Verify maximum speed per Rule 532
5. Verify minimum range
6. Verify horn operation

Remote Control Operating Rules

1. The operator shall use appropriate remote control frequencies authorized by the FCC or any other legal forms of transmission.
2. If the operator is using remote control operation (riding on equipment) between Control Points, the operator must allow faster trains to pass safely at first possible location.
3. When operating by remote control, the operator shall not operate equipment close to unprotected people or equipment without notifying them.
4. When operating by remote control, safety zones must be established between equipment and non-operating personnel. Safety zone is defined as the track the equipment is operating on and a reasonable clearance for equipment to pass without hitting any personnel in the area.
5. No person shall interfere with the operation of another operator's equipment unless it is to prevent injury to personnel or damage to equipment.
6. When operating at night, the equipment must illuminate the area in front of direction of travel to prevent injury or damage to equipment. Operator must be in visual contact at all times.

7. The operator must maintain control during the entire operating session maintaining visual contact with equipment at all times. Cameras are not to be used to control equipment. Communication via radio with another person for train control is not allowed.
8. Any conflicts between operators regarding operating frequencies shall be resolved by the operators themselves. If no resolution can be obtained, then the trainmaster / dispatcher / club official shall resolve the problem.
9. No Radio Control equipment shall be used to pull the public.
10. When the public is being pulled, the Radio Control operator shall use extreme caution when on the same subdivision as the public trains are operating. The public trains have right of way at all times. The Radio Control equipment shall not impede the public trains in any manner.
11. Ride on equipment operation
 - a. When Radio Control operator is riding on the equipment, the operator shall be at the front of the train. The operator shall ride on the engine or on engineer car similar to those used for gas hydraulic equipment.
 - b. The speed limit when operating in this method is the authorized speed limit for operation per rule 532.
 - c. The engineer must be able to verify the correct position of switch points and verify there are no obstructions on the track ahead for safety considerations of passengers and bystanders.