

A.

**Deadman Switch** – This pushbutton to the left of and below the Backup Controller must be fully depressed and held down to enable the streetcar to operate in reverse.

B.

**Backup Controller** – This is the power and brake controller for use when the streetcar is operated in reverse. The controller has 5 detent positions. From right to left, they are:

a)

**Brake/Park** – Applies the streetcar brakes.

b)

**Brake** – Applies the street car brakes. This is also the position where the Shift Lever is inserted to operate the backup controller and where the Shift Lever can be removed from the backup controller.

c)

**Brake** - Applies the streetcar brakes.

d)

**Drive or Accelerate** – Applies power to the motors and moves the streetcar in reverse. If you move the lever just barely to the right of this Accelerate detent, there is a “Coast” position. There is no detent for “Coast.” In this position the car is not accelerating nor braking; it will roll along until you accelerate again or brake.

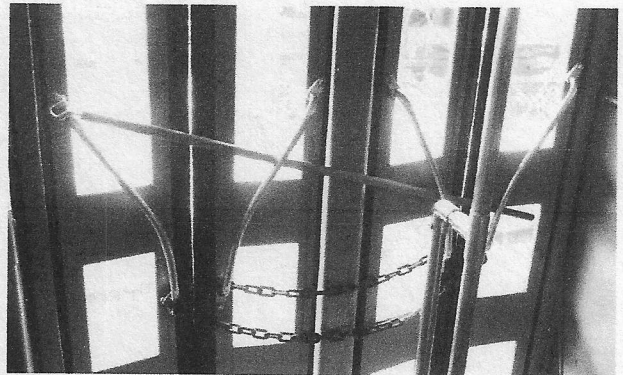
e)

**Drive or Accelerate** – Applies power to the motors and moves the streetcar in reverse.

## Operating the PCC Car No. 1743

### Energizing the Streetcar

1. Unlock the #1 front door.
2. Enter the car and remove and store barricades from the #2 front door and the exit (rear) doors.



3. Verify all switches on Control Panel are “OFF” except Door #1 and MG switches which should be on.
4. Place the Shift Lever in the reverse position and remove it and take it with you.
5. Exit car and perform your walk-around on the outside of the car.
  - a) Verify all truck brake levers are in the “operate” or in position.
  - b) Remove and stow onboard all wheel chocks.
6. Open battery compartment door using the square bottom of the Shift Lever to un-screw the upper door fastener, pull open the right door, pull open the left door and turn battery switch “ON”. Then close and secure the battery compartment doors using the Shift Lever.

7. Raise the appropriate power pole (trailing pole). Verify the other power pole is secure in its roof hook.
8. Re-enter the streetcar and turn "ON" the Motor/Generator switch.
9. Sit in the Operator's seat, insert the Shift lever back into the control box and move it to the "Park" position.

### Forward Operation

1. Verify the rear power pole is up and the front power pole is down and secured in the roof hook.
2. Depress the heel of your left foot on the Deadman Switch on Power Pedal (left pedal) and hold down.
3. Release the Parking Brake on the Brake Pedal (right pedal) by pressing you right heel down on the Parking Brake portion of the Brake Pedal. After releasing the parking brake, remove your foot from the brake pedal. **DO NOT PUT YOUR FOOT ON THE BRAKE PEDAL UNTIL YOU NEED TO SLOW THE CAR!** Leaving your foot on the brake pedal will activate the brakes and is called "riding the brakes", and causes the brakes to be applied while you are trying to move the car which causes excessive wear of the brakes.
4. Move Shift Lever to the "Forward" position.
5. Sound gong twice.
6. Apply power to move the streetcar forward (depress power (left) pedal) and perform a brake test (on initial movement of the car.)
  - a. **If brakes do not function, park the streetcar and use another streetcar.**
  - b. **Make note in log book and notify maintenance.**
7. Whenever you leave the Operator's seat, the Deadman switch should be up, the Parking Brake set, and place the Shift Lever in Park.

### Reverse Operation

1. A. Press and hold the deadman down with the TOE of the left foot.  
 B. Press the top part of the brake pedal with the TOE of the right foot all the way down or until you hear a distinctive click.  
 C. **GENTLY, SLOWLY** remove the left toe from the deadman.  
 D. Remove toe from the upper part of the brake pedal. The deadman should remain down.
2. Change the power poles – raise the front power pole.
3. Using the hook stick to reach the trolley pole rope, lower the rear power pole and secure it in its roof hook.
4. Move the Shift Lever to the REVERSE position and remove the lever.
5. Proceed to the rear of the streetcar.
6. Remove right center seat back by pulling out and up and set the cushion to the side.
7. Insert the Shift Lever into the Backup Controller – see pictures under Backup Controller.
8. Depress the Deadman Button to the bottom of its travel and hold it there.
9. Move the Shift Lever to the left to the 1<sup>st</sup> Accelerate position to move the streetcar backwards, move the Shift Lever to the right to a brake position to stop the streetcar. If the Shift Lever is moved to the right a small amount from the 1<sup>st</sup> Accelerate position, the car will coast – neither accelerate or brake.
10. When the reverse operation is completed, remove the Shift Lever from the Backup Controller, replace the seat cushion, proceed to the front operator position, insert the Shift Lever in to the control stand and move it to the Park position.
11. Change the power poles – raise the front power pole and lower the rear power pole (use the hook stick to reach the retriever rope) and secure it in its roof hook. PLEASE use the hook stick to guide the retriever rope back into the Catcher SLOWLY and from the left side of the car to avoid damaging or entangling the rope in the Catcher.

### Parking and De-Energizing the Streetcar

1.

**Temporary Parking** – (When the streetcar is to be shut down for a short time (e.g. a lunch break))

- a)  
Park the streetcar in a suitable location.
- b)  
The operator must verify the Deadman Switch is up and set the Parking Brake.
- c)  
Move the Shift Lever to the Reverse position and remove the shift lever.
- d)  
Turn off all control panel switches.
- e)  
The wheel chocks must be set.
- f)  
The operator must then disengage the trolley pole from the overhead wire and store it in its rooftop retainer.
- g)  
Use the Shift Lever to open the Battery Compartment, turn off the battery switch and re-close and secure the Battery Compartment.
- h)  
Place the Shift Lever on the floor just behind the control stand.
- i)  
The doors will be closed and barricaded or locked.

## 2.

### Parking in the Abbot Building

- a)  
Verify Abbot Building power is on.
- b)  
The streetcar must be driven to the point where the mainline overhead wire parallels the Abbott Bldg. wire. The trolley pole must be transferred to the Abbott Bldg. wire and the streetcar moved to its parking space in the Abbott Bldg. NOTE: If the car is to be stored on the north track, the pole must be changed twice.
- c)  
Turn off the control panel switches except Door #1 and MG set switches.
- d)  
The trolley pole should be disengaged from the trolley wire and placed in the retainer on the streetcar's roof.
- e)  
The battery switch in the streetcar's battery compartment must be placed in the de-energized (down) position.
- f)  
Place the wheel chocks at the front and rear wheels of the front truck on the right side of the car. All dash switches should be moved to the off position (back).
- g)  
Close and secure the operator's window. Close the rear doors and barricade them. Close the rear front door and barricade it. Close the forward front door and secure with a streetcar lock. Make sure that all windows in the streetcar are closed.
- h)  
Barricade the front door #2 and the (Rear) exit doors with the rods and fasten the chains as tight as possible leaving as little slack in the chain as possible.



# St. Louis Waterworks Car #10

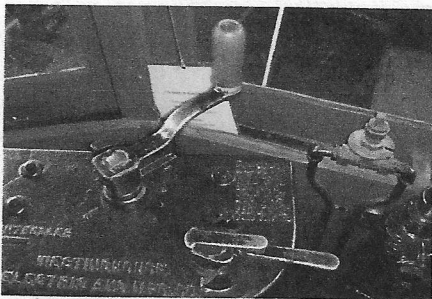
## Controls and Devices

### Control Description

1. The waterworks car has identical controls at both ends of the car.
2. There are also two trolley poles, one on each end of the car.
3. The car has three basic controls, a drum controller, a directional key and a brake. All three controls have removable handles. The control handles are stored under the seat on the door side of car end #1 in a locked ammunition box. Return them here when parking the car at the end of



the run.



4. As the handle on the drum controller is advanced clockwise, resistance in the motor circuit is reduced allowing the motors to run faster and increasing the car's speed.

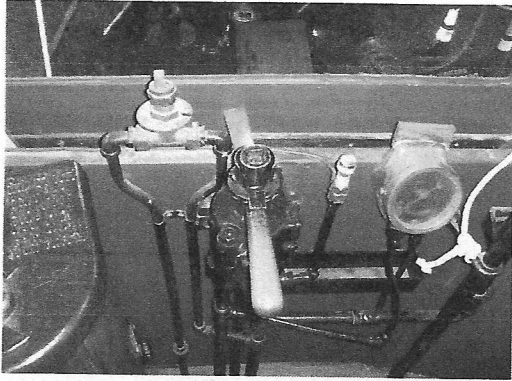
5. The directional key is mounted on the near, right hand side of the drum controller. The directional control has three positions: Forward (away from the Operator) ; Reverse (toward the Operator) and Neutral (between Forward and Reverse).

a. When the handle of this key is set away from the operator, the car will go forward.

b. When it is set toward the operator, the car will go backward.

c. In the Neutral position, the car's motors will not operate. The key can be removed when in the Neutral position.

**Note! Other than in very unusual circumstances the car will never be operated in reverse.**



6. The brake handle is mounted on the window sill to the right of the operator. It has three positions and an air pressure gauge. With the handle in the right position the brakes are applied. When the handle is in the left position, the brakes are released. With the handle in the mid (lap) position the valve holds the existing pressure in the brake cylinder.

7. The air pressure gauge has two needles. The red needle shows the reservoir pressure and the white needle shows the braking pressure from 10 psi and up. This reading is unlikely to get to 30 psi except for an emergency brake application.



8. A hand brake wheel is located on the right side of the car at the B end. This brake should be applied whenever the car is parked without air in the brake system and should be used in case of an emergency.

9. A fuse box is mounted on the vestibule wall at the A end of the car. Mounted in it are (1) fuses for all of the cars electrical circuits and (2) switches for the inside car lights. This box is to be kept locked at all times except when the operator has specific business inside.

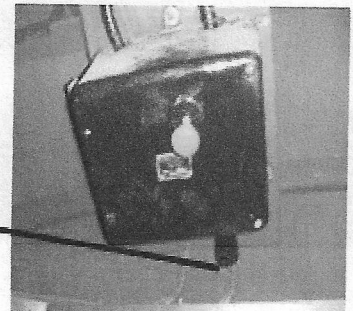


10. A headlight switch is above and to the left of the operator's position at both ends of the car.

a.

This is a center-off, double throw switch. The headlight is energized by moving the lever to the right.

11. Immediately above the operators position is a breaker that controls the car's power. The breaker can be re-activated by pulling the handle to the energized position.



12. A door handle to the right of the operator at the A end of the car is manually operated to open and close the doors. This handle is mounted on the left side at the B end of the car.
13. A whistle is mounted above the brake handle at each end of the car and is actuated by pulling the attached rope.

## Operating the Waterworks Car #10

1. Close the drain valve on the air reservoir.
2. Check the compressor oil and top off if necessary. (Sample/Fill port in yellow circle)
3. Raise the trailing pole.
4. Wait until the air compressor builds up at least 70 psi pressure before moving the car. After this reservoir pressure is reached, apply the brakes. Release the hand brake and remove the chocks.
5. Turn on the headlight in the direction of travel.
6. Drum Controller Operation
  - a) When operating the controller, never allow it to be in any control notch longer than three seconds. Move the lever to the first position to start the car moving. After three seconds, move the lever to the second position and on to the third position if more speed is required, again holding it in no position for longer than three seconds. The controller can be left only in the full series position without time limit. With the control lever in the off position the car will coast. The recommended operation is to energize, then coast, energize and coast. Never back the controller down one notch at a time. Instead, snap the controller to the de-energized or first position in one quick motion.
  - b) Any other operating mode will result in overheating the resistors and damage to the car wiring.
7. A light touch is required in operating the brake. The brakes can be applied harder or bled off as the car slows. For a smooth stop, apply the brake relatively hard at first. Then back off as the car slows. The brakes become more effective as the car slows. You will have a rough stop (even sliding the wheels) if the cylinder pressure is too high.
  - a. When stopped at the end of a run, watch the brake pressure gauge. Do not leave the operating position for more than a few minutes because the air pressure may bleed off and allow the car to roll.
8. Always have a pole on the overhead wire. At the end of a run, raise the forward trolley pole to the wire before lowering the trailing pole. **Never wrap the trolley rope around the headlights.**
9. In the unlikely event of a functional failure of the air system, it could be necessary to stop the car using the hand brake wheel located at the B-end of the car. You would know this failure had occurred or was occurring by a loud air exhaust as when the reservoir valve is opened or a total ineffectiveness of the air brakes. If the power controller is not off, move it to the off position immediately.
  - a) If the operator is at the B-end of the car, then go to the brake wheel and wind up the brake. Use the foot pawl to hold the braking action. If the conductor is at the B-end of the car, the operator should holler to the conductor to apply the hand brake. If necessary to get the conductor's attention, the operator should go through the car to the conductor.
  - b) The hand brake is not as effective as the air brakes, but will bring the car to a gradual stop.

10. When reaching the tunnel stop where you will change ends, sound the whistle once to indicate that it is safe for passengers to get up. Douse the headlight. Set the brake pressure. Change poles. Do not turn on the headlight at the other end of the car until you are ready to run.
11. When leaving the car, the operator should remove and store the drum controller, direction key and brake handles under the seat. This is also where the log book is kept.
12. If the car is to be shut down for a short time, say for a lunch break, park the car in a suitable location. Remove the drum controller, directional key and brake handles and store them under the seat. Set the hand brake and chock the wheels. Lower the poles. Close and lock the doors.
13. When shutting down for the night, park the car in a suitable location. Remove the drum controller, direction key and brake handles and store them in the locked box under the seat.
  - a) Disengage the trolley pole from the overhead wire and store it in its rooftop retainer. Set the hand brake and chock the wheels.
  - b) Close and lock the doors.
14. After the car is parked for the night, relieve the air system reservoir pressure by opening the drain valve at the reservoir on the left side of the car. Leave this valve open.
15. Do not allow the passengers to operate the windows, they are too fragile. The operator should open or close the windows as required.
16. At the end of the day, record operating hours (the time the trolley pole is up), the passenger count and the money collected in the log book. Money collected should be counted and placed with the Operator's Log Sheet in an envelope, sealed and initialed and dated and put in the red mail box in the locked tool crib in the Restoration Building.



## Stopping Positions

### Tunnel end:

1. With the doors on your left: stop with nose of car at middle of paved area
2. With the doors on your right: stop with car nose at the number 311 on the tender

### At Roberts Building:

1. Heading into the loop: stop nose of car at the end of the brick wall
2. Coming out of the loop: stop nose of car just before steps on high platform



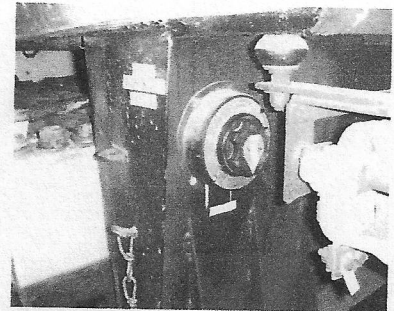
# Chicago Transit Authority Elevated Car (CTA) #44

## Important Safety Issues

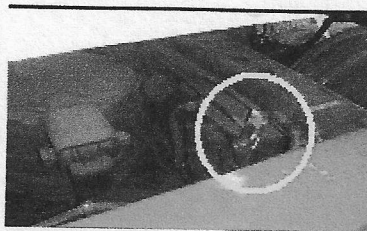
1. Do not allow visitors in the cab when the car is being operated. When parked, it is good Public Relations to let people see the cab and explain the operation to them.
2. No one shall ever ride anywhere on the outside of the car.
3. When the Operator leaves the operators cab, they must take a door key with them or risk being embarrassed by getting locked out. The Operator is not to leave the cab door open when he steps out and passengers have access to the car.
4. Keep the chains latched across the ends of the car at all times.
5. In starting the car and changing ends, since the battery switch is engaged, keep the Motor-generator set running as much as possible.
6. Encourage kids to ride the railfan seat in the front left of the car.

## Controls and Devices

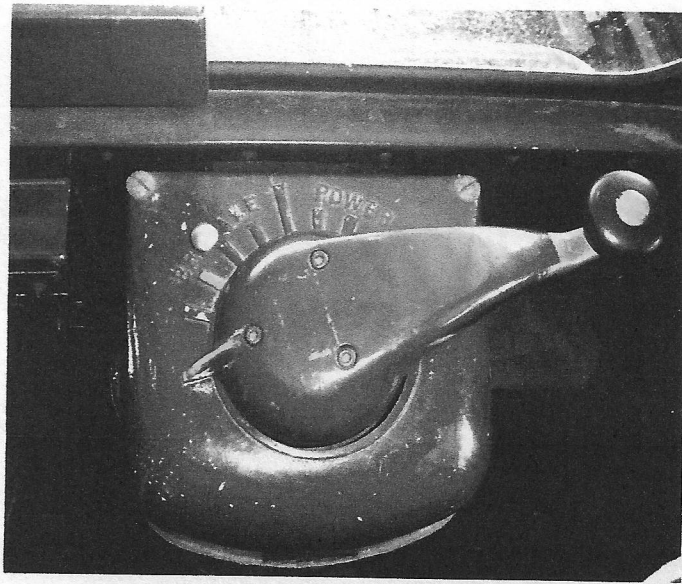
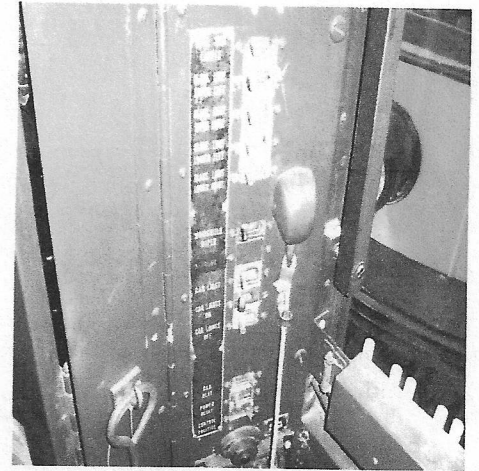
1. **Battery switch** - A rotary switch located on the battery box under the #1 side of the car. Batteries power the control circuits on the car and run down if this switch is closed and the Motor-generator set is not running.



2. **The shaft brake actuator levers** - Two located on each truck. They engage the motor shaft brake. The main handle for each is on opposite sides of the truck. The end with the large yellow handle must be pulled toward the outside of the car to engage the shaft brakes. All four shaft brakes must be engaged to operate the car. In most cases these levers will be left in operating condition from run to run.



3. **Auxiliaries switch panel** - This panel to the left of the operator contains a variety of switches to operate lights and other auxiliaries on the car. Two lower switches labeled Power Reset and Control Positive are important operating controls.



4. **The main controller handle** - This is the main operating device on this car

a) The **deadman safety** is overridden by pressing down on the outer end of the controller handle. It must be held down while operating the car. Releasing the handle will shut down the car and set the brakes quickly.

b) The **coast** position of this controller is with the controller pointer in the center forward position. This cast-in mark is longer than the others on the controller. **There is no power applied or brakes engaged in this position.**

c) From this coast position, moving **clockwise**, the three positions are **acceleration** notches and apply in- creasing power at an increasing rate.

d) Moving the handle **counterclockwise** applies increasing amounts of **braking**.

- i. Brake Position 1. - Dynamic brakes;
- ii. Brake Position 2. - Shaft brakes;
- iii. Brake Position 3. - Track brakes;
- iv. Brake Position 4. - **Park** and hold the car with power on;
- v. Brake Position 5. - **Store** position. Shuts off the power.

In brake positions 2 thru 5, the shaft brake is engaged and the car will not roll.

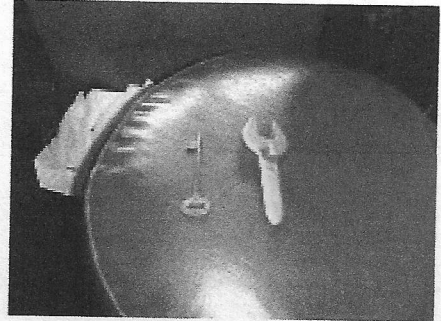
5. **Door operator switches** - The door switches that we use are located behind the Operator inside the cab. The door key is required to be in the lock and rotated down to operate the doors. Each switch operates only one door. The train door switches on the outside wall of the cab will not be used in our operation.

6. **Exterior operating switch** for door - Along side each door on the number 2 end, there is a key switch that allows the opening of that door when the car is energized. Since the end doors open manually, it will not be necessary to use this method of entry on a regular basis.
7. **The Train Control Box** - This box is on the upper right of the front of the cab and has no function in our operation.

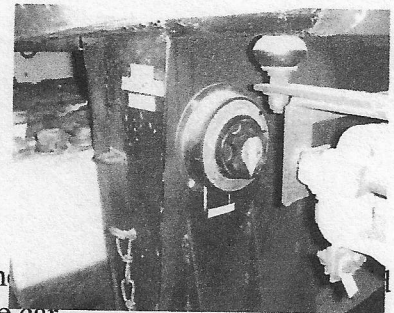
## Operating CTA #44

### Starting up and Running the Car

1. To operate this car, you will need one door key and a Cineston key.



2. Before boarding the car, turn the rotary switch on the side of the battery box to one of the **ON** positions to connect the batteries.

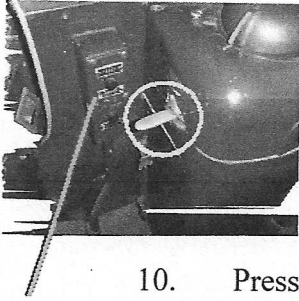


3. Make sure all the shaft brake actuator levers on the trucks are in the **OFF** position. The **large yellow handle** must be pulled **toward outside** of the car.



4. Remove and stow the wheel chocks.
5. The work on the ground is finished at this point. The Operator should now board the car. Hook all the safety chains across the door openings.
6. The Conductor may stay on the ground at this point to throw the track switch and move the pole at the mainline. The Conductor must still keep watch on the rear of the car to see that no one comes into an unsafe location. The Conductor may board the car via the Emergency Exit access platform on the end of the car.
7. With an Operator in the cab, raise the pole at the opposite end of the car.

8. On the auxiliary switch panel, verify that the **Control Positive Switch** is **ON**. (On is toward the front of the car.)



9. Insert the Cineston key into the controller stand. (See yellow circle in picture above.) Move it away from you to the forward position. Hold down the deadman handle, move the controller handle clockwise one notch to the park position. The motor-generator set should come on at this point. If it does not, re-check your start up procedure up to this point.
10. Press the controller handle down and move it clockwise to the third brake position, a yellow mark.
11. At this point, the car is ready to run. Sound the horn appropriately. Move the controller clockwise through the coast position to the first accelerate notch. **DO NOT STAY** in the COAST POSITION long enough to let the car roll backwards. Applying power to the motors while the car is rolling backwards will burn up the motors.
12. **IF THE CAR DOES START TO ROLL BACKWARD**, stop it by pressing the manual track brake button alongside the controller stand. (See the red line in the photo above.) Then release the button as you apply power.
13. As soon as the car is in motion, make a brake application to test the brakes. If the brakes do not function properly, park the car and use another.
14. Operate the car similar to the PCC. Control the speed by applying power, then coasting. To apply braking, move the controller handle counterclockwise past the coast point. To achieve more braking, move the controller handle further counterclockwise up to the third brake position.
15. To make an **emergency stop**, just let up on the controller handle. The deadman application will occur stopping the car quickly.

#### **Door Operation: -**

1. The Operator should stop the car with the closer door at the boarding platform. When you turn to operate the doors, put the controller handle in the **PARK** position (Position 4) and release it. The Conductor must be at the door before the Operator opens it.
2. Only one door will be at the platform. Be extremely careful to open the **NEAR DOOR ONLY** on the correct side of the car. The floor of this car is 44 inches above the ground.
3. The Conductor will be at the door to lower the dockboard and assist passengers with exiting and entrance. The Conductor, or on busy days, a third person on the platform will open the gate on the platform after the car is in place blocking the entire edge of the platform.

### Signals:

1. On this car, it is necessary for the Conductor and Operator to communicate verbally. All communications shall include reinforcement.
2. For example: Conductor to Operator: "We're all clear to proceed." Not just "OK."
3. **Before** acting on the instruction, the Operator shall respond in a similar way: "Car 44 leaving the platform Eastbound."

### High Level Platform Procedures

1. Passengers are not to congregate on the track side of the fence whether or not the car is stopped at the platform. Other than at the dockboard, there is a 16" gap between the platform and the side of the car. It would be undesirable to loose a man, woman or child into this gap.
2. Departing passengers are to be politely guided directly from the car through the gate. Allow them time to gather their party and then move them to the South side of the fence.
3. Passengers waiting to board the car are not to be allowed through the gate to the car until departing passengers are off the car and through the gate. Boarding passengers are to be guided directly to the dockboard and onto the car. If someone wants to take photos of a child in the window, they must do so from behind the fence.
4. After the passengers are boarded, the Conductor will close and lock the platform gate, raise the dockboard and reboard the car.
5. The Operator will close the door. Check to see that the dockboard has been raised. Press down on the deadman, and you are ready to go.

### Changing ends.

1. At the Tunnel end of the line, tell the passengers that they will be going back to the starting point because we have only one loading platform.
2. Changing ends normally will only occur at the tunnel end of the line or when putting the car away. Since you will not be at a platform, the doors will be closed. When changing ends, everything in the operating cab is shut down as if the car were being totally shut down. When you go to the other end, you start up as bringing the car on line.

### Shutting down the cab:

1. Press the silver button that is left of center on the top of the controller cabinet. Move the controller handle counterclockwise to the "store" position. The M-G set will shut down.
2. Move the Cineston key to neutral and remove the key. Remove the key from the door control panel.
3. It is **not** necessary to turn the control positive switch off.
4. Take all keys and go to other end of the car.
5. When changing ends, get the Motor-generator set back up and running as quickly as possible to prevent drawing down the car's batteries.
6. While the Operator is doing these things, the Conductor can be changing poles while standing in the end doors of the car.
7. Before moving the car at any time, the Operator **MUST** check to see that the front pole is **DOWN**.

### Putting the car away

1. Pulling into the Abbott Building follows the same procedures as with the other cars. When the car is in its final parked position, take the following steps.
2. Press the silver button and move the controller handle to the store position. Move the Cineston key to the neutral position and remove it.

3. Remove the door key from the door actuating switch. Store the keys in the lockbox. Pull the pole. Set the wheel chocks. Turn off the battery switch.

If it's the end of the operating day, follow the power shutdown procedures as well.



# SUGGESTED CONDUCTOR NARRATION WITH NEW BROCHURE

Welcome aboard *CAR\_NAME/CAR\_NUMBER*! This is one of four vintage streetcars maintained and operated by the Museum of Transportation Trolley Volunteers. This car was built for *CITY\_NAME* in *YYYY*. It ran in revenue service until *YYYY*. Shortly thereafter the car was obtained for the Museum and brought here.

*INCLUDE INFORMATION ABOUT THE STREETCAR AND TROLLEY LINE HERE AS YOU NORMALLY DO.*

This brochure tells more about it and provides information on how you can become involved in supporting our Trolley Heritage Partnership. Information is also included on becoming a volunteer.

If you would like to make a donation of funds for materials to enable our volunteers to maintain and expand our line and fleet, please use the fare box or send a tax deductible gift to the address in the brochure. Thank you for your support and enjoy your day!

*HAND OUT BROCHURE TO ADULTS.*



# OPERATOR LOG SHEETS AND HANDLING THE DONATIONS

The Operator's Log sheet has been modified to add two more fields for information that will allow the gathering of more statistics. The new fields are GROUPS and WEATHER. If you are aware of any groups riding the car, please enter the type of the group (e.g. school, church, railfan groups, etc.) on the appropriate line. The second new field is for the Weather. Please enter the weather (e.g. sunny, rain, lightning, overcast, etc.) on the appropriate line. A picture of the new operator's log sheet is shown below. Sample entries have been entered in the fields normally completed by the car crew at the end of each day's operations.

## MTTV OPERATING LOG

PLEASE INCLUDE THIS SHEET IN THE ENVELOPE WHEN YOU TURN IN YOUR FARE BOX RECEIPTS.  
PLEASE DATE THE OUTSIDE OF THE ENVELOPE.

Car Number 4999 Date 08/01/00

Time into service 99:99 Time out of service 99:99 Operating hours 99:99

Crew Members OPERATOR 2, OPERATOR 2, OPERATOR 3, OPERATOR 4

Number of riders 999 Groups SCHOOL CHILDREN Weather SUNNY PARTLY Fare box \$ 999.99

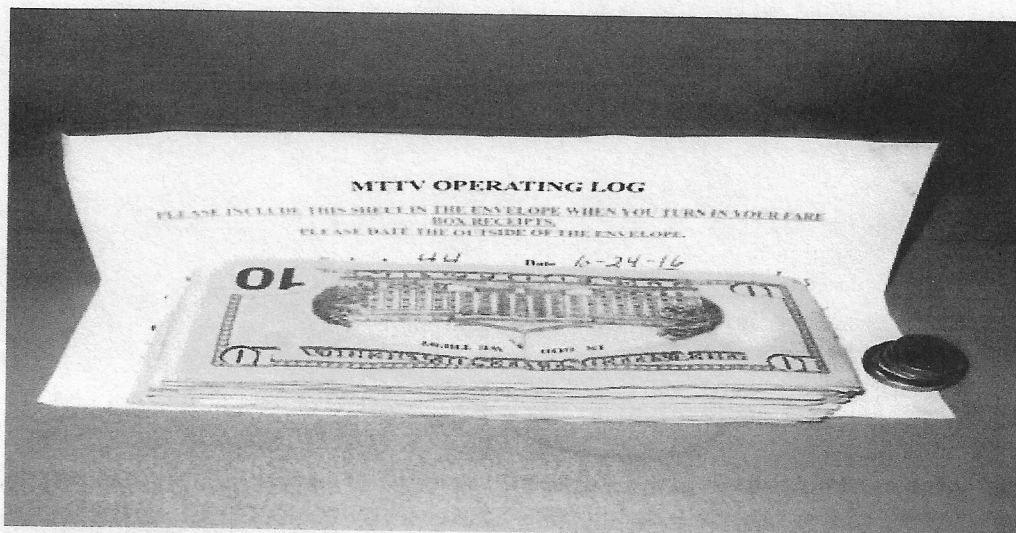
Defects identified \_\_\_\_\_

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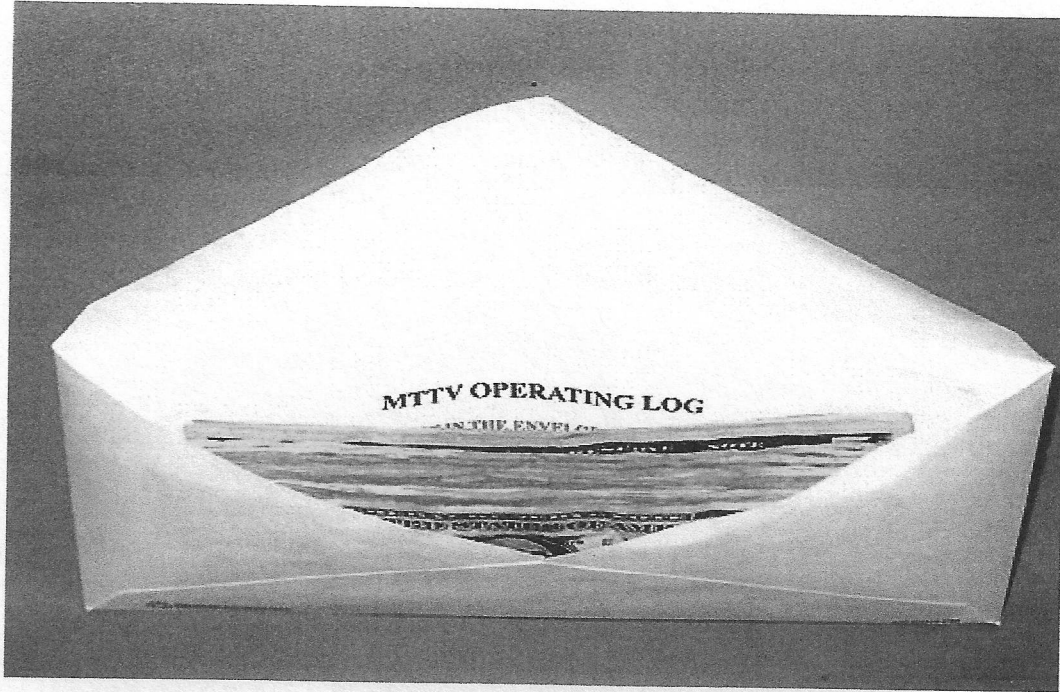
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Once the money has been counted, fold the operator's log sheet in half lengthwise and insert the money as shown in the next picture.



Insert the money and the folded operator's log into the envelope as shown in the next picture. Don't forget to drop any coins into the envelope.



Seal the envelope, put ONLY the date on the outside of the envelope and place it in the red mailbox on the right side of the tool crib in the shop.

