

Operating Practices Manual

OP-1



Effective 0001

January 1, 2017

General Notice:

The Operating Practices Section (OP-1) of the Belt Railway of Chicago Operating Manual is intended for all employees whose duties involve the operation or inspection of air brakes on locomotives or cars. Additionally, this section includes the instructions for the safe operation of remote control locomotives.

Employees involved in these activities must maintain a thorough knowledge of these instructions, and must have a copy of these instructions with them to refer to while on duty.

Additional information and training will be made available to these employees, upon request to their supervisor, the Director of Rules and Compliance, or the Manager Operating Practices.

Additions or modifications to these instructions will be made by Operating Practices General Orders. Additional information will be provided in Transportation Notices, as needed.

H.T. Kirman

Director of Operating Rules and Compliance

M.G. Labbe

Manager of Operating Practices

Table of Contents:

| Rule | Subject | Page | Rule | Subject | Page |
|------------------|--|--------------|------------------|---|--------------|
| Section 1 | Locomotive EQ and Operation | 5-23 | Section 2 | Train Air Brake Test and Inspection | 27-31 |
| OP 1.1 | Inspection | 5 | OP 2.4.3 | Class I (Leakage Test) | 27 |
| OP 1.2 | Inspection Procedure | 5 | OP 2.4.4 | Yard Test Plant | 28 |
| OP 1.2.1 | Conducting Inspection | 7 | OP 2.5 | Class II Air Brake Test | 28 |
| OP 1.2.2 | Results of Inspection | 10 | OP 2.5.1 | Class II Application | 28 |
| OP 1.3 | Non-Complying Conditions Enroute | 12 | OP 2.5.2 | Class II Test Procedure | 28 |
| OP 1.4 | Major Internal Defects | 12 | OP 2.6 | Class III Air Brake Test | 29 |
| OP 1.5 | Standard Pressures | 13 | OP 2.6.1 | Class III Application | 29 |
| OP 1.6 | Locomotive Cabs | 13 | OP 2.6.2 | Class III Test Procedure | 29 |
| OP 1.7 | Brake Equipment Positions | 14 | OP 2.7 | Transfer Train Air Test | 30 |
| OP 1.8 | Dead Locomotives | 15 | OP 2.7.1 | Transfer Test Application | 30 |
| OP 1.9 | Changing Operating Ends | 15 | OP 2.7.2 | Transfer Test Procedure | 30 |
| OP 1.10 | Jumper Cables/Air Hoses | 16 | OP 2.8 | Trainline Kept Charged | 30 |
| OP 1.11 | Unattended Locomotives | 16 | OP 2.9 | Locomotive Brake Test | 30 |
| OP 1.12 | Locomotive Overcharge | 17 | OP 2.10 | Alerter Test | 31 |
| OP 1.13 | Dynamic Brake Operation | 17 | OP 2.4.3 | Class I (Leakage Test) | 27 |
| OP 1.13.1 | Transfer Power/DB Operation | 17 | OP 2.4.4 | Yard Test Plant | 28 |
| OP 1.13.2 | Brake Warning Indication | 17 | OP 2.5 | Class II Air Brake Test | 28 |
| OP 1.13.3 | Wheel Slip in DB Operation | 17 | OP 2.5.1 | Class II Application | 28 |
| OP 1.13.4 | Excessive Braking Effort/DB | 18 | OP 2.5.2 | Class II Test Procedure | 28 |
| OP 1.13.5 | Independent Brake/DB | 18 | OP 2.6 | Class III Air Brake Test | 29 |
| OP 1.13.6 | PC Knock Out/DB | 18 | OP 2.6.1 | Class III Application | 29 |
| OP 1.13.7 | Isolating Power/DB | 18 | OP 2.6.2 | Class III Test Procedure | 29 |
| OP 1.13.8 | BRC Locomotive Data Table | 19 | OP 2.7 | Transfer Train Air Test | 30 |
| OP 1.14 | Standing Trains | 20 | Section 3 | Train EQ Operations and Train Handling | 32-35 |
| OP 1.15 | Alertness Devices | 20 | OP 3.0 | Train EQ and Train Handling | 32 |
| OP 1.16 | Emergency Application Reset | 20 | OP 3.1 | End of Train Devices | 32 |
| OP 1.17 | Separating Locomotives | 20 | OP 3.1.1 | Coupling to Cars with ETD | 32 |
| OP 1.18 | Locomotive Shut Down Policy | 21 | OP 3.1.2 | ETD Inspection | 32 |
| OP 1.18.1 | Shut Down Procedures | 21 | OP 3.2 | Two Way ETD | 32 |
| OP 1.19 | Detaching Locomotives/Cars | 21 | OP 3.2.1 | ETD Arming Procedure | 32 |
| OP 1.20 | Wheel Slip | 22 | OP 3.2.2 | Brake Pipe comparison/ETD | 32 |
| OP 1.21 | Main Reservoir / Charging | 22 | OP 3.2.3 | Emergency Application Test | 33 |
| OP 1.22 | Speed Indicator | 23 | OP 3.2.4 | Enroute ETD Failure | 33 |
| OP 1.23 | Turbocharger | 23 | OP 3.3 | Emergency Brake Application | 33 |
| OP 1.24 | Engine Protection Buttons | 23 | OP 3.4 | Brake Valve after Emergency | 33 |
| OP 1.25 | Air Flow Meter | 23 | OP 3.5 | Maximum Braking Effort | 33 |
| Section 2 | Train Air Brake Test and Inspection | 24-31 | OP 3.6 | Undesired Brake Application | 33 |
| OP 2.0 | Train Air Brake Test | 24 | OP 3.7 | ETD Emergency Application | 34 |
| OP 2.1 | Responsibilities | 24 | OP 3.8 | Use of Independent Brake | 34 |
| OP 2.2 | Equipment Inspection | 26 | OP 3.9 | Issues with Air Brakes | 34 |
| OP 2.3 | Brake Test (AFM) | 26 | OP 3.10 | Train Control Issues | 34 |
| OP 2.4 | Class I Air Brake Test | 26 | OP 3.11 | Freight Car Air Brakes | 34 |
| OP 2.4.1 | Class I Application | 26 | OP 3.12 | Rear Car Brake Capability | 35 |
| OP 2.4.2 | Class I (AFM) | 27 | OP 3.13 | Train Overcharge | 35 |
| OP 2.4.3 | Class I (Leakage Test) | 27 | OP 3.14 | Sticking Brakes | 35 |

Table of Contents:

| Rule | Subject | Page | Rule | Subject | Page |
|------------------|---|--------------|------------------|---------------------------------|--------------|
| Section 3 | Train EQ Operations and Train Handling | 35 | Section 4 | Remote Control Operation | 44-47 |
| OP 3.15 | Equipment with Hand Brakes | 35 | OP 4.16.4 | Cleaning Switches | 44 |
| OP 3.16 | Railroad Crossing at Grade | 35 | OP 4.16.5 | Snow Brake Feature | 44 |
| OP 3.17 | Unintentional Brake Release | 35 | OP 4.16.6 | Over-Riding PSP | 45 |
| OP 3.18 | Hot Journal Bearings | 35 | OP 4.16.7 | Verification of PSP | 45 |
| OP 3.15 | Equipment with Hand Brakes | 35 | OP 4.16.8 | Overriding PSP | 45 |
| OP 3.16 | Railroad Crossing at Grade | 35 | OP 4.17 | Hump RCO Assignments | 45 |
| Section 4 | Remote Control Operation | 36-47 | OP 4.17.1 | Pitch Control (HUMP) | 45 |
| OP 4.0 | Remote Control Operations | 36 | OP 4.17.2 | Trains with Air (HUMP) | 45 |
| OP 4.1 | Abbreviations (RCO) | 36 | OP 4.17.3 | Assisting Stalled Trains | 46 |
| OP 4.2 | Operators Manual and EQ | 36 | OP 4.17.4 | Remote Control Speeds | 47 |
| OP 4.3 | Transfer of RCL | 37 | OP 4.17.5 | Variable Speed Humping | 47 |
| OP 4.4 | Handheld Radio (RCL) | 37 | OP 4.18 | Special Op. Proc. (RCL) | 48 |
| OP 4.5 | Control of Movement (RCL) | 37 | OP 4.19 | Op. Proc Industry (RCL) | 48 |
| OP 4.6 | Set Up and Testing | 37 | Section 5 | Special Equipment | 49 |
| OP 4.6.1 | Control Stand Set-Up (EBV) | 37 | OP 5.1 | M/W Equipment | 49 |
| OP 4.6.2 | Electrical Panel Set-Up | 38 | OP 5.2 | Scale Test Cars | 49 |
| OP 4.6.3 | Control Stand RCL Shut Down | 38 | Section 6 | OP Definitions | 50-55 |
| OP 4.7 | Hostling Locomotives | 38 | Section 7 | Appendix A | 56- |
| OP 4.8 | Remote EQ Set-Up | 39 | OP 7.1 | Non-Complying Loco | 56 |
| OP 4.8.1 | RCO Radio Frequencies | 39 | OP 7.2 | Class I Air Brake Slip | 57 |
| OP 4.9 | RSC Alerter – Test | 39 | OP 7.3 | Bad Order Tag | 58 |
| OP 4.10 | Tilt Test | 40 | | | |
| OP 4.11 | Testing RCL Safety EQ | 40 | | | |
| OP 4.12 | "A" Operator Assignment | 40 | | | |
| OP 4.13 | Remote Control Tag | 40 | | | |
| OP 4.14 | Operating the Equipment | 41 | | | |
| OP 4.14.1 | Qualified RCO | 41 | | | |
| OP 4.14.2 | Control of RCL consist | 41 | | | |
| OP 4.14.3 | Automobiles (RCO) | 41 | | | |
| OP 4.14.4 | RCO Performance of Duties | 41 | | | |
| OP 4.14.5 | RCO Pitch and Catch | 41 | | | |
| OP 4.14.6 | OCU Fasteners | 41 | | | |
| OP 4.14.7 | Tilt Messages (CRITICAL) | 42 | | | |
| OP 4.14.7.1 | Tilt – Non Emergency | 42 | | | |
| OP 4.14.8 | Disabled RCL Devices | 42 | | | |
| OP 4.14.9 | Light RC Consists | 42 | | | |
| OP 4.15 | Securing RC Equipment | 43 | | | |
| OP 4.15.1 | Spare OCU Handling | 43 | | | |
| OP 4.15.2 | Unattended Equipment | 43 | | | |
| OP 4.15.3 | RCO Going Off-Duty | 43 | | | |
| OP 4.16 | RCO Procedures | 43 | | | |
| OP 4.16.1 | Assignment of OCU | 43 | | | |
| OP 4.16.2 | OCU Batteries | 43 | | | |
| OP 4.16.3 | Flat Spots (RCL) | 44 | | | |

OP 1.0 - Locomotive Equipment and Operation

OP 1.1 Daily Inspection of Locomotives:

- A. Each locomotive in use must be inspected at least once each calendar day. A written report of the inspection will be made on Form #2322, Locomotive Inspection Report, for each locomotive requiring the inspection.

NOTE: A calendar day by definition is a 24-hour time period from 0001 until 2359.

- B. Locomotive engineers and Remote Control Operators, or other designated employees, are considered qualified to make a locomotive inspection. Each locomotive engineer or remote control operator is responsible for ensuring that each locomotive in his or her charge is inspected each calendar day by a qualified employee. As an operating practice, the normal inspection of locomotives will take place on first shift unless otherwise directed by proper authority.
- C. If the inspection of the locomotive by the locomotive engineer, remote control operator, or other designated inspector reveals a defect which will require correction before the locomotive is used, and the defect cannot be corrected by the locomotive engineer, remote control operator or other qualified employee, this fact must immediately be brought to the attention of the Diesel Shop Foreman, by radio. If unable to contact, the Train Dispatcher, Yardmaster, or Mechanical supervisory personnel must be notified in order to assure that repairs can be made.

OP 1.2 Locomotive Inspection Procedure:

General Requirements:

When locomotive inspection forces are not immediately available, an engineer or remote control operator taking charge of a locomotive consist must know that the brakes are in operating condition.

Engineers and Remote Control Operators are responsible for the following:

1. If possible, position yourself so you can conduct a roll-by inspection of an incoming locomotive consist
2. Keep the side and end doors of the locomotive closed when the doors are not being used
3. Keep cab windows and doors of unoccupied trailing locomotives closed
4. Keep the locomotive's high-voltage cabinets closed during operation
5. Verify that brake pipe exhaust ports are not plugged or obstructed

6. Make a visual inspection of the control cab (including the nose of the cab) for any obvious damage to devices such as speed indicators, radios, HED, event recorder, etc., including cable connection to these devices
7. Verify that the independent brake valve handle is not blocked in the actuate position.
8. Verify that the brake shoes are thick enough to last until the next maintenance or through the shift in yard service.
9. Check for sliding wheels at frequent intervals if:
 - The locomotive is dead
 - The locomotive is isolated
 - The locomotive has one or more traction motors cut out

A. Inspection Requirements - Miscellaneous:

If the locomotive inspection card indicated the locomotive was inspected the previous calendar day, complete the daily inspection before the end of the tour of duty unless advised that the inspection will be made by mechanical forces.

If the tour of duty will go beyond 2359, conduct the locomotive inspection before 2359. Contact the Train Dispatcher, Yardmaster, or proper authority to determine where to complete the inspection.

B. Locomotive Not Inspected on Previous Calendar Day:

If the locomotive inspection card indicates that the locomotive was not inspected on the previous calendar day, or there is no record in place, inspect the locomotive before placing it into service.

C. Locomotives Picked Up Enroute:

When locomotives are picked up on line, the Locomotive Engineer or RCO will determine which locomotive will require a daily inspection.

No working locomotive in the consist after the pickup may have a date older than the controlling locomotive.

D. Locomotives Set Out On Line:

When setting out a locomotive on line which was inspected on the previous calendar day, inspect the locomotive, unless notified that the locomotive will be inspected by the Mechanical Department before 2359 or directed by proper authority.

OP 1.2.1 Conducting a Locomotive Inspection:

Not all defects are non-complying conditions. However, the following items are noncomplying conditions, if they do not function properly during the daily inspection.

Remote control locomotives must be in manual mode when conducting inspection.

Inspect these three general areas of each locomotive:

- Control Compartment / Locomotive Cab
- Walkway and Engine Compartment
- Ground Level Inspection

A. Control Compartment / Locomotive Cab:

Verify that FRA Form F 6180-49A (blue card) is displayed under a transparent cover in the cab of each locomotive

Operate sanders to deposit sand in front of each locomotive's lead wheels using the reverser position to determine the direction

Ensure that:

1. Air gauges - Each gauge registers correctly and is within 3 psi of the required pressure
2. Headlight - At least one bulb is to be operational on each end of the locomotive consist
3. Ditch lights - At least one of two is operational in the direction of travel.
4. Horn operates
5. Bell operates
6. Gauge lights and engineer's overhead cab light illuminate.
(If burned out and other available lighting is sufficient to allow visibility from the crew's normal position, report as a defect but not a non-complying condition)
7. Speed indicator functions accurately.
(After a daily inspection, if the speed indicator failure is identified on the lead locomotive as soon as it begins moving, the failure is a non-complying condition discovered during the daily inspection)

8. Locomotive cab is free of stumbling or slipping hazards
9. Windows provide a clear view. Small cracks that do not obscure view must be reported as a defect but not a non-complying condition
10. Locomotive toilet facility is sanitary and operational, if equipped
11. Traction Motors - None have been cut out unless locomotive is a GE AC, GE-8 DC, GE-9 DC & EMD AC
12. Cab seats are properly secured.
Note: Locomotives with defect items 3, 4, 5, 6, 7, 9, and 10 above, may be used in power as trailing units. These defects must always be reported, but are considered non-complying only when positioned in locomotive consist as the lead controlling locomotive.

B. Walkway and Engine Compartment:

Inspect both sides of each locomotive to ensure that:

1. Walkways and walk-in compartments (car body-type locomotives) are clear of debris, tools, and accumulated oil or grease that present a hazard to the crew.
2. Handrails, hand holds, steps, ladders, safety chains, and guards are secured and ready for service.
3. Inspect for broken, bent, damaged, or loose equipment. Make sure safety chains are connected high enough for safe passage.
4. All electrical and rotating equipment guards are in place.
5. The diesel engine has no apparent exhaust, oil, water, or fuel leaks
6. The hand brake is operational
7. Walkway and engine compartment lights are working. If burned out and other available lighting is sufficient to allow visibility from the crew's normal position, report as a defect but not a non-complying condition.

C. Ground Level Inspection:

Inspect the exposed areas for apparent defects, but do not crawl under or between locomotives to make the visual inspection.

Set hand brakes, if necessary, and walk around both sides of the locomotive to ensure that:

1. Sand is deposited on the rail in front of the lead wheels of each locomotive in consist
2. Fuel tank is not leaking
3. No defects such as cracks and broken or missing parts are on the locomotive trucks, wheels, gear cases, or draft gears
4. Brake cylinder piston travel is:
 - Minimum: Sufficient to provide brake shoe clearance when the brakes are released.
 - Maximum: 1-1/2 inches less than the travel entered on FRA Form F 6180-49A (blue card) in the locomotive cab
5. Foundation brake rigging is secured and all components other than wheels and sand hoses are at least 2 1/2 inches above the top of the rail.
6. Snowplow, pilot, or endplate is properly secured and is between 3 inches and 6 inches above the top of the rail.
7. Brake shoes are secured and approximately in line with the tread of the wheel. Make sure the shoe has no obvious lips or overhangs.
8. No part of the electrical cable is lying on the coupler.
9. Unused electrical cables are stowed, or the disconnected ends are placed into a dummy receptacle or a multiple-unit cable holder.
10. Manually drain oil and water from main reservoirs that are not equipped with automatic drains. If equipped with automatic drains, ensure the valve handles are then turned fully counter-clockwise to the automatic position, with the stem extending beyond the valve handle.

D. Documentation of Inspection:

Cab Card Form 2322 must be completed to show the date, place and time the locomotive was inspected.

This form will be placed in the card holder in the locomotive cab. The top copy of the locomotive daily inspection form will be left in the Hours of Service/Timeslip box located at various locations on the BRC.

The written report must include the following information:

- Date
- Location
- Time
- Complying or Non-Complying (Check appropriate box)
- Inspector's signature

If it is known the locomotive was not used on a calendar day, the words "NOT USED" should be entered on the appropriate dates of the cab card.

OP 1.2.2 Results of Locomotive Inspection:

1. Defects, Other Than Non-Complying Conditions:

If a defect or problem is found, and it is identified as a non-complying condition, the employee making inspection must do the following:

Complete a locomotive inspection report for each locomotive in the consist with the defect

Report any locomotive failing to produce power to the Diesel Shop Foreman

Examples of defects noted, that are not non-complying conditions include:

- Defective weather stripping
- Windshield Wiper Failure
- One headlight bulb burned out or not working
- Ground relay tripped
- Safety valve popping off continuously

2. Non Complying Conditions:

A locomotive with one or more conditions, not in compliance with FRA Locomotive Safety Standards, may be moved only as a light locomotive or as a dead locomotive except as provided for in OP 1.2:

A. When a Non-Complying Condition is discovered

A qualified person must determine:

- If the locomotive is safe to move
- The maximum speed and other restrictions necessary for movement

B. The Locomotive Engineer or Remote Control Operator must be notified, in writing, and must notify all those occupying the locomotive cab of the restrictions in handling the non-complying locomotive. This notification will include:

- The maximum speed and any other restrictions for the handling of the non-complying locomotive

The non-complying tag must be completely filled out, the original placed on the control stand of the locomotive.

If the locomotive is safe to move, it may be moved only:

- As a single locomotive, under power, not attached to cars
- In a locomotive consist not attached to cars
- If isolated, or shut down, when attached to cars

Exceptions:

- Controlling locomotives found with defective speed indicators during daily inspection may be operated under power, attached to cars not exceeding 20MPH
- Locomotives with an inoperative speed indicator may be used within Clearing Yard
- Locomotives with an inoperative speed indicator must not be used on the main line as a controlling locomotive
- A locomotive with a non-complying condition may be moved in a yard, not to exceed 10MPH for the expressed purpose of moving to a repair facility, if the movement can be made safely.

If the locomotive is not safe to move:

When it is determined thru inspection that the locomotive is not safe to move:

- The locomotive must be tagged with a non-complying tag on the isolation switch of the locomotive
- The Train Dispatcher, Yardmaster or proper authority must be notified.

OP 1.3 Non-Complying Conditions Found Enroute:

When a locomotive develops a non-complying condition Enroute, it may continue to be operated if the Locomotive Engineer, RCO or other qualified employee determines the locomotive is safe to move and completes the Locomotive Inspection Report.

The locomotive can then be operated at normal speed until the next daily inspection or until it reaches the next point where repairs can be made, whichever occurs first.

When non-complying conditions are found Enroute the Locomotive Engineer or Remote Control Operator must:

- Report any non-complying conditions on the Locomotive Inspection report
- Leave a copy of the Locomotive Inspection Report, noting the defect, on the locomotive unless otherwise instructed
- Report non-complying conditions to the Train Dispatcher and Diesel Shop Foreman by quickest available means
- Notify a relieving Locomotive Engineer of non-complying conditions found
- Apply a NON-COMPLYING tag to the isolation switch of the non-complying locomotive

Examples of Non-Complying conditions found enroute include:

- Speed Indicator varying by more than 3MPH when operating at 25MPH or less
- Individual flat spots of 2.5 inches or greater
- Flat spots of 2.0 inches or more, adjoining

NOTE: Flat spots meeting the above criteria must be set out at first available point, DO NOT EXCEED 10MPH while handling locomotives in this condition.

Locomotive flat spots will be reported on Form 2322, and reported to Diesel Shop Foreman before going off duty.

OP 1.4 Major Internal Defects Found Enroute:

When a locomotive has a major internal defect do the following:

- Isolate the locomotive
- If noise indicates a major internal defect in the diesel prime mover or the turbocharger, shut down the locomotive
- When a locomotive is shut down under these circumstances, do not restart the locomotive until the equipment has been inspected
- When locomotives with major defects are set out enroute, arrange to leave them where Mechanical Department forces have vehicle access

OP 1.5 Standard Air Pressures:

Locomotives:

- Main Reservoir 130-140 PSI
- Air Compressor Safety Valve 175 PSI
- Compressor Intercooler Safety Valve 55-65 PSI
- Independent Brake Valve 72 PSI
- Service Portion Limiting Valve 60 PSI
- Brake Pipe Pressure
- Standard (Freight) 90 PSI
- Passenger (Metra) 90 PSI
- Passenger (Amtrak w/ Freight leader) 105 PSI

OP 1.6 Locomotive Cabs:

- Locomotive cab windows and doors of unoccupied trailing locomotives must be closed
- Any electrical cabinet door(s) which are marked, "DANGER HIGH VOLTAGE" or "DANGER 600 VOLTS", must not be opened unless the locomotive is isolated.

OP 1.7 Brake Equipment Positions:

26L Brake Equipment:

| | <u>LEAD</u> | <u>TRAIL</u> |
|---------------------------|--------------|--------------|
| AUTOMATIC BRAKE HANDLE | RELEASE | HANDLE OFF |
| INDEPENDENT BRAKE HANDLE | RELEASE | RELEASE |
| BRAKE VALVE CUT OUT VALVE | IN | OUT |
| MU 2-A | LEAD OR DEAD | TRAIL |

Electronic Brake Equipment (CCB-26):

EBV – Lead / Trail Switch:

| <u>POSITION</u> | <u>AUTOMATIC BRAKE</u> | <u>INDEPENDENT BRAKE</u> |
|----------------------------|------------------------|--------------------------|
| LEAD CUT-IN or SINGLE UNIT | CUT-IN | CUT-IN |
| LEAD CUT-OUT | CUT-OUT | CUT-IN |
| TRAIL CUT-OUT | CUT-OUT | CUT-OUT |
| DEAD IN TRAIN | CUT-OUT | CUT-OUT |
| DEAD IN CONSIST | CUT-OUT | CUT-OUT |

CCB-26 Electronic Air Brake System has 5 modes of operation:

LEAD CUT-IN or SINGLE UNIT – Independent brake control is available via the Independent Brake Valve. Equalizing Reservoir control is available via the Automatic Brake Valve. The Brake Pipe Pressure is Cut-In and follows equalizing reservoir pressure.

LEAD CUT-OUT – Independent brake control is available thru the Independent Brake Valve Handle. Equalizing Reservoir control is available with the Automatic Brake Valve, but the brake pipe is cut out and will not follow Automatic Brake Valve positions. EMERGENCY position is always available via the Automatic Brake Valve.

TRAIL CUT-OUT – Equalizing reservoir is exhausted, and Brake Pipe is cut-out. Brakes will apply and release in response to brake pipe pressure in the train line. Brake Valve will not respond to handle movement except to create an emergency brake valve application when moved to EMER. Automatic brakes apply and release in response to train line pressure reductions and increases.

DEAD IN TRAIN – The Electronic Air Brake System is unpowered and the locomotive is being towed in a train (not in the controlling locomotive consist). Brakes will apply and release in the same manner as a freight car.

DEAD IN CONSIST – The Electronic Air Brake System is unpowered and the locomotive is in the controlling locomotive consist. Brakes will apply and release in the same manner as a freight car.

OP 1.8 Dead Locomotives:

Dead locomotives must be moved in the locomotive consist, and, if possible, at the rear of the locomotive consist.

A dead locomotive moved in a locomotive consist must have all MU connections, air hoses, and safety chains connected and its air brake equipment positioned for trail. The dead locomotive will receive air pressure through the main reservoir equalizing host and can then provide all “trail” air brake functions.

OP 1.9 Changing Operating Ends:

26L Brake Equipment:

To Cut Locomotive Air Brakes Out (LEAD to TRAIL):

- A. Make 20lb brake pipe reduction
- B. After exhaust stops, move Automatic Air Brake Valve Cut Out Valve to OUT.
- C. Automatic Brake Handle to HANDLE OFF position.
- D. Move Independent Brake Handle to FULL APPLICATION.
- E. Move MU2-A valve to TRAIL.
- F. Move Independent Brake Handle to RELEASE.
- G. Place Generator Field Switch to OFF.
- H. Properly position headlight switches for the consist.

To Cut the Locomotive Air Brakes in (TRAIL to LEAD):

- A. Move Independent Brake Handle to FULL APPLICATION.
- B. Move MU2-A valve to LEAD or DEAD.
- C. Move Automatic Brake Handle to RELEASE.
- D. After Train Line and Equalizing Reservoir balance, Move Automatic Air Brake Valve Cut Out Valve to IN.
- E. Place Generator Field Switch to closed ON.
- F. Properly position headlight switches for the consist.
- G. Perform locomotive brake test.
- H. Place Generator Field Switch to ON.
- I. Properly position headlight switches for the consist.

CCB 26 (Electronic Brake Valve):

To Cut Locomotive Brakes Out (LEAD to TRAIL):

1. Move Independent Brake Handle to the FULL APPLICATION position.
2. Make 20PSI brake pipe reduction.
3. Turn Mode Switch on EBV to indicate TRAIL (**TRL**).
4. When EBV screen displays the following message: MODE CHANGE; MODE =TRAIL, the automatic and independent brakes are now cut out.
5. Move Automatic Brake Handle to HANDLE OFF (**HO**) position.
6. Move Independent Brake Handle to RELEASE position.
7. Turn Generator Field Switch OFF.
8. Properly position headlight control switch.

To Cut Locomotive Bakes In (TRAIL to LEAD):

1. Move Independent Brake Handle to the FULL APPLICATION position.
2. Turn Mode Switch on EBV to indicate **LEAD IN**.
3. When EBV Screen Displays the following message: MODE CHANGE; MODE = LEAD IN, the automatic and independent brakes are now cut in.
4. Move Automatic Brake Handle to RELEASE **REL** position.
5. Check air gauges and note proper pressures are being maintained.
6. Turn Generator Field Switch ON.
7. Properly position headlight control switch.
8. Perform a Locomotive Brake Test.

When changing operating ends, control must be established at the other end without delay

OP 1.10 Jumper Cables/Air Hoses:

Jumper cables must not be permitted to hang with one end free and must be properly stored in the car body, or plugged into a dummy receptacle when not in use. Spare air hoses and "dummy" hoses must be stored in the car body and not on locomotive steps or walkways.

OP 1.11 Unattended Locomotives:

1. When a locomotive or consist of locomotive is left standing, not coupled to cars, the Independent Brake Handle must be in the full applied position and latched, if equipped. The Automatic Brake Valve Handle must be positioned for a 20lb. brake pipe reduction.
2. Hand Brakes must be applied on all locomotives in the locomotive consist, apply GCOR Rule 7.6.2 (modified by BRC Special Instruction)

OP 1.12 Reducing Locomotive Overcharge Condition:

- Adjust regulating value to desired setting
- Actuate Independent Brake Handle in "FULL APPLICATION" position
- Place Automatic Brake Handle in "HANDLE OFF" position until brake pipe pressure exhausts to zero psi
- Release Independent Brake Handle from actuate position
- Move Automatic Air Brake Handle to "RELEASE" position

OP 1.13 Dynamic Brake – General Operation:

OP 1.13.1 Transfer from Power to/from Dynamic Brake Operation:

Engineman will transfer from power operation to dynamic brake operation as follows:

1. Place throttle in "IDLE" position and selector lever is "OFF" and pause for ten (10) seconds
2. Move selector lever to braking position
3. After slack has adjusted, braking effort can be increased as desired

Engineman will transfer from dynamic brake operation to power operation as follows:

1. Gradually reduce dynamic brake effort to zero
2. After slack has adjusted, move selector lever to "RUN" and advance throttle gradually to desired position

OP 1.13.2 Brake Warning Indication:

If brake warning light flashes, do not increase dynamic braking effort until the light goes out. If the light fails to go out after several seconds, decrease the dynamic braking effort until the light goes out, then throttle may be advanced again.

OP 1.13.3 Wheel Slip in Dynamic Braking:

If the wheel slip light flashed constantly during dynamic braking, the engineman should reduce dynamic brake effort. If the condition continues, train should be stopped and locomotive wheels checked to ensure that they rotate freely.

OP 1.13.4 Excessive Braking Effort / Dynamic Brake Power Restrictions:

The locomotive air brakes and dynamic brakes must NOT be allowed to apply simultaneously at speeds above 10MPH, to avoid wheel and brake component damage.

Maximum dynamic power below 10MPH must not exceed Position 5.

Unless otherwise restricted, full available dynamic brake power may be used, to a maximum of 200,000 lbs. This is referred to as a dynamic brake factor of 20.

Unless otherwise provided, on any foreign locomotives, the following applies:

- 4 Axle Locomotives, dynamic brake factor (DB) is 6
- 6 Axle DC Locomotives, dynamic brake factor (DB) is 8
- 6 Axle AC Locomotives, dynamic brake factor (DB) is 12

Total dynamic brake power on-line in a locomotive consist must not exceed a DB of 20, excess units must be isolated.

OP 1.13.5 Independent Brake Actuation During Dynamic Braking:

When in dynamic braking, and an automatic brake application is initiated, the Independent Brake Handle must be actuated for a minimum of six seconds per locomotive to ensure independent brake is released on all locomotives in the locomotive consist.

OP 1.13.6 Dynamic Brake PC Knock Out:

Foreign line locomotives are equipped so that when the Automatic Brake Value handle is placed in EMERGENCY position the dynamic brake will continue to function, rather than being nullified from the PC action (if brake cylinder pressure is less than 15 PSI).

OP 1.13.7 Isolating Power in Dynamic Braking:

When the dynamic brake is in operation on a locomotive consist, units will not intentionally be isolated, or if isolated, will not be placed on line.

OP 1.13.8 BRC Locomotive Data Table:

| Number | Locomotive Type | Builder | Horsepower | Air Brake Valve Type |
|-----------------|------------------|---------|------------|----------------------|
| 150 | MP15AC | EMD | 1500 | EBV |
| 151 | MP15AC | EMD | 1500 | EBV |
| 140 | 2-GS14B | MPI | 1400 | EBV |
| 210 | 3-GS21B | MPI | 2100 | EBV |
| 211 | 3-GS21B | MPI | 2100 | EBV |
| 230-237 | GP23-ECO | EMD | 2300 | EBV |
| 560-561 | SD40 | EMD | 3000 | 26L |
| 300-308 EVEN | SD40-3 (Hump) | EMD | 3000 | EBV |
| 301-309 ODD | SLUG (Hump) | | 0 | N/A |
| 310-312 | SD40-3 | EMD | 3000 | EBV |
| 580-581 | GP38-2 | EMD | 2000 | 26L |

26L = 26L Brake Valve

EBV = CCB 26 Electronic Brake Valve

BRC Locomotives are not equipped with Dynamic Brakes

OP 1.14 Standing Trains:

Applying power to hold a standing train is prohibited

OP 1.15 Alertness Devices:

Some foreign line locomotives are equipped with a device designed to stop the train with a service rate penalty brake application. This would occur should the Locomotive Engineer become disabled, and is functional anytime the locomotive brake cylinder pressure is below 25 psi. This device will continuously monitor operator alertness and recycle itself when any of the following actions occur:

- A throttle position change is made
- A dynamic brake handle change is made
- The horn is sounded
- The bell is activated
- The RESET button is activated

If the device does not sense and recycle from one of these actions, a warning light will flash and a warning horn will sound for 20 seconds. If, during this time, the device still does not recycle, a penalty brake application will be made.

To reset a penalty brake application:

- Place throttle in idle
- Place Automatic Brake Handle in SUPPRESSION position
- Wait approximately 45 seconds
- Observe PCS light goes out
- Move Automatic Brake Handle to RELEASE position
- Observe equalizing reservoir and brake pipe pressure to ensure they both build up

OP 1.16 Emergency Application Reset:

To reset the PC after an emergency brake application:

- Move throttle to IDLE
- Center reverser
- Move Automatic Brake Handle to EMERGENCY position
- Wait 60-90 seconds (On units equipped with EBV check crew message window)
- Move Automatic Brake Valve Handle to RELEASE position
- Observe PCS light goes out, equalizing and brake pipe pressures build

OP 1.17 Separating Locomotives:

Before separating locomotive units:

- Disconnect and secure electrical cables, handrail safety chains, MU hoses, and other connections
- Close all angle cocks and end cocks between units to be separated
- Allow train line air hoses to part during separation

OP 1.18 Locomotive Shut Down Policy:

Unless otherwise instructed, shut down all locomotives left standing unattended for 15 minutes or longer when the ambient temperature is forecast to be 35 degrees Fahrenheit or greater.

RCL locomotives, temporarily secured for breaks or meal periods, will not be shut down unless temporary stop will exceed 15 minutes.

Locomotives within locomotive servicing areas may be started, when necessary for movement, or as required for maintenance activities. They then must be shut down when complete whenever outside temperature exceeds 35 degrees Fahrenheit, unless instructed by the Diesel Shop Foreman.

On multiple unit locomotive consists, leave one unit running to maintain air pressure when coupled to cars.

In Distributed Power (DP) consists, it is not required that units not in the lead locomotive consist be shutdown, unless directed by proper authority.

Locomotives tagged "weak batteries" should not be shut down until the condition is corrected.

Locomotives equipped with an automatic start/stop system (Smart Start) may be left running, but only when the system is enabled.

When the system is not operable, the locomotive is considered non-equipped. Remote Control Locomotives must be in MANUAL mode for this system to function.

Secure unattended equipment to prevent movement, apply GCOR 7.6, GCOR 7.6.1, GCOR 7.6.2.

OP 1.18.1 Shutdown Procedures:

When shutting down a locomotive:

- Fully apply independent brake
- Apply hand brake
- Place Generator Field Switch to "OFF"
- Remove and stow reverser handle
- Move locomotive isolation switch to "START/STOP/ISOLATE" position
- Place switches or breakers for air conditioning, lights, heaters, refrigerators, and other accessories in the "OFF" position
- Shut down engine
- Open Main Battery Switch

OP 1.19 Detaching Locomotive(s) and/or Cars:

When any part of a train is left standing, do not depend on the air brake system to secure the cars.

When detaching locomotives or locomotives and cars:

- Secure equipment against undesired movement as outlined in GCOR Rule 7.6 (Securing Cars or Engines)
- Release air brakes to ensure hand brakes are sufficient to hold train and prevent movement
- Make a 20 PSI Automatic Brake Application
- After brake pipe exhaust has stopped, close angle cock on rear locomotive or last car to be detached from portion of train left standing
- Leave angle cock open on portion left standing

BOTTLING THE AIR IS SPECIFICALLY PROHIBITED

- Allow brakes on standing portion to apply in EMERGENCY by leaving the angle cock open

Exception:

If portion of the train left standing will not be left unattended, and the locomotives will immediately couple to the cars at the opposite end, it is permissible to close the angle cock on the portion of the train left standing after:

- The brake pipe pressure has been completely exhausted on the portion left standing
- A minimum of one minute has elapsed since the train was separated

OP 1.20 Wheel Slip Indications:

Intermittent wheel slip is a normal locomotive function and does not require reporting.

Constant wheel slip indication requires the Locomotive Engineer to inspect the locomotive consist as soon as practicable to determine that all wheels are freely rotating.

If all wheels are rotating freely, the consist may remain in service, and condition must be noted on Form 2322.

If locomotive is in dynamic braking when the condition is noted apply OP 1.15.3.

OP 1.21 Main Reservoir Pressure When Charging Train Line:

During initial brake pipe charging, the locomotive main reservoir pressure may temporarily drop. If the main reservoir pressure drops to less than 100 PSI, follow this procedure:

- Center the reverser lever
- Place GENERATOR FIELD Switch in "OFF"
- Increase throttle as required (Not to exceed RUN 4 on EMD locomotives, on AC locomotives and locomotives equipped with electric air compressors leave throttle in "IDLE"
- When main reservoir pressure increases to 130 PSI, return the throttle to "IDLE"

OP 1.22 Speed Indicator:

Each speed indicator must be checked for accuracy as soon as possible after departure from the terminal using the timetable speed chart.

Train speeds must be adjusted if speed indicator is found to be in error, and information noted on Form 2322, with verbal notification provided to the Diesel Shop Foreman or Train Dispatcher.

OP 1.23 Turbocharger:

On units equipped, the Turbo Lube Pump Light will be lit before engine startup and after engine shutdown. This is not an indication of a failure.

OP 1.24 Engine Protection Buttons:

Protective buttons are located on the governor designed to protect against damage to the locomotive in the event of a failure, if equipped:

Low Water Button: (Red band displayed when activated)

- This may be held "IN" by hand when starting the diesel engine, unless water level stabilizes. If it continues to activate, check engine water level

Crankcase Overpressure Button: (Red band displayed when activated)

- If this button is tripped (Red band showing) DO NOT RESET, locomotive is to be left shut down and drained, if conditions require. Notify the Train Dispatcher and Diesel Shop Foreman immediately in the event of this condition.

OP 1.25 Air Flow Meter:

The air flow meter indicates the rate in cubic per minute (CFM) that air flows into the brake pipe. It provides the following information:

As the brake system begins charging, a high flow into the brake pipe is indicated by:

- High numbers (Greater than 60 CFM) and the pointer moving to the right

As the brake system becomes charged, a lesser air flow is indicated by:

- Lower numbers (Less than 60 CFM) and the pointer moving to the left

When the air flow meter shows a reading less than 60 CFM, and has stabilized, the brake system can be considered as being charged.

Once the air flow meter shows a constant reading the locomotive engineer should:

- A. Note the rate of flow and use this number as a reference to determine when the brake system is charged.
- B. Adjust the reference pointer to agree with the flow pointer.

NOTE: This reading is a reference value to use to monitor fluctuations in the air flow to the brake pipe

OP 2.0 – Train Air Brake Test and Inspection

OP 2.1 Responsibilities – Test and Inspection – Qualifications – Miscellaneous:

Inspectors, Locomotive Engineers and Trainmen are responsible for the condition of air brake equipment on locomotives and cars, to the extent that it is possible to detect defective equipment by required air tests.

While a brake test is being made, the train is under the jurisdiction of employees making such tests. The train must not be moved, brakes applied nor brakes released without their authorization.

Locomotive Engineers and Trainmen are considered a "qualified person" as defined in 49 CFR 232.5. Car Inspectors are considered a "qualified mechanical inspector" as defined in 49 CFR 232.5.

A "qualified person" or "qualified mechanical inspector" may perform the following air brake tests:

- CLASS I – Freight
- CLASS II – Freight
- CLASS III – Freight
- Transfer Train Air Test
- Locomotive Air Brake Test

A "Qualified Mechanical Inspector" may perform the following tests:

- 1000-mile inspection
- 1500-mile Extended Haul inspection
- CLASS I – Passenger
- Train Brake Test, using Yard Test Plant

Miscellaneous:

- In the context of air brake tests, the definition of "Initial Terminal" means the location where the train is originally assembled
- Off-Air means not connected to a continuous source of compressed air of at least 60 PSI
- A two-way end of train device shall be tested at the initial terminal or other point of installation to determine that the device is capable to initiating and emergency power brake application from the rear of the train. See Train Equipment Operation and Train Handling Rules for additional brake test related information.
- If a person, other than a member of the train crew, performs this test, the locomotive must be notified in writing that a successful test was performed. A

written record of the notification must be maintained in the cab of the controlling locomotive, and shall include the date and time of test, location, and name of person conducting the test

- Brakes that do not apply, or release before a release is initiated, must be re-tested and it must be determined that brakes remain applied until a release is initiated from the controlling locomotive or yard test plant after a period of not less than 3 minutes has elapsed
- On cars with one hand brake, the "B" end of the car is the end with the hand brake. On cars with more than one hand brake, the letters "A" and "B" are stenciled on the appropriate ends of the car
- While performing an air brake test, inspect the retaining valves to ensure they are properly positioned. All freight cars have retaining valves located at the "B" end of the car or at the side near the control valve. The retaining valve controls brake cylinder pressure exhaust
- To correctly identify wheels on a car:
 - A. Face the "B" end of the car
 - B. From the "B" end of the car, identify the designation of wheels, journals and axles as follows:
 - Axles are designated from the "B" end of the car with "1" for the axle closest to the "B" end.
 - Wheels and journals are designated from left to right as viewed from the "B" end.
 - Specific wheels are designated using the axle and wheel designation
- Scale test cars handle in trains do not need to be equipped with air brakes. Scale test cars with train line air hoses, but no brakes, must be handled as the second rear car on a train

OP 2.2 Equipment Inspection:

OP 2.2.1 Freight Car Inspection:

Instructions on freight car inspection are contained in GCOR 1.33 as amended by System Special Instructions.

When a defective car is set out, the car tagged as defective can only be authorized for movement by a "Qualified Mechanical Inspector".

OP 2.3 Brake Test Using Air Flow Method:

The Air Flow Method will be used in lieu of a brake pipe leakage test provided all of the following conditions exist:

- Controlling locomotive is equipped with an FRA approved Air Flow Meter
- Train has an operative end of train device (ETD)
- Employee conducting test is qualified on the Air Flow Method

OP 2.4 Class I Air Brake Test – Initial Terminal Inspection:

Engineer Notification:

A Qualified Employee who participated in the test and inspection, or who knows the test was completed must notify the Locomotive Engineer either verbally or in writing that the Class I Air Brake Test – Initial Terminal Inspection has been satisfactorily completed.

Locomotive Engineers will accept written notification of an air test being performed as valid information that a Class I Air Brake Test has been properly performed and completed successfully. The written notification will be retained on the controlling locomotive until the next Class I or Class IA Air Brake Test.

OP 2.4.1, Class I Air Brake Test (Application):

- A. Each train and car in the train will receive a Class I Air Brake Test by a "qualified person" at the following points:
- Where the train is made up (Initial Terminal)
 - At a location where the trains consist is changed, other than by:
 - Adding a single car or solid block of cars from a single previous train that received a Class I Air Brake Test and the cars added have not been off a source of compressed air for more than four hours.
 - Removing a single car or solid block of cars
 - Removing car(s) found to be defective
- B. When a train is received in interchange, when a train consist is changed other than by:
- Removing a car or solid block of cars from the train

- Adding a previously tested car or solid block of cars
- Changing motive power
- Removing or changing an end of train device
- Any combination of the previous four items

C. At a location where a train is off a source of compressed air for more than four hours.

OP 2.4.2 Class I Air Brake Test Procedure (Air Flow Method):

Procedure for conducting the Class I Air Brake Test:

- A. Charge air brake system to within 15 PSI of the regulating valve setting, but not less than 75 PSI as indicated by ETD, or gauge at the rear of the train
- B. AFM must be at or below 60 CFM
- C. Make a 20-Pound service brake application
- D. No brake pipe leakage test is to be made
- E. Train Inspection must be made on both sides*
- F. Release train brakes
- G. Check all cars for release (Release may be performed by roll by inspection, not to exceed 10MPH)
- H. If brake pipe leakage check is made in conjunction with the AFM test, the AFM will govern the qualification of the train, regardless of leakage

*Train Inspection consists of determining that all angle cocks and retaining valves on cars are properly positioned, that brakes are applied on each car, that piston travel is correct, that brake rigging does not bind or foul, and that all parts of the brake equipment are properly secured.

OP 2.4.3 Class I Air Brake Test Procedure (Brake Pipe Leakage Method):

Procedure for conducting Class I Air Brake Test (Leakage Test Method):

- A. Charge air brake system to within 15 PSI of the regulating value setting but not less than 75 PSI as indicated by ETD or gauge at end of train
- B. Make a 20-pound brake pipe reduction
- C. After exhaust stops, move automatic air brake cut out valve to OUT position
- D. Wait 60 seconds
- E. Time brake pipe leakage for 1 minute (Leakage cannot exceed 5 PSI per minute)
- F. Move Automatic Brake Valve Handle to reduce equalizing reservoir pressure to match brake pipe pressure
- G. Move automatic air brake cut out valve to IN
- H. Move Automatic Brake Valve handle to reduce brake pipe pressure to Full Service (63 PSI from 90 PSI)

OP 2.4.4 Yard Test Plant – Class I Air Brake Test Notification:

Upon completion of a Class I Air Brake Test the locomotive engineer will be notified in writing and maintain the written record in the controlling locomotive until the train reaches its final destination.

The Written or Electronic Air Test Record shall contain the following information:

1. Date
2. Time
3. Number of cars inspected
4. Location where Class I Air Test was performed
5. Identification of the qualified person(s) performing the test

If notification is missing, a person having knowledge that the Class I Air Test was satisfactorily performed may provide notification.

It must include all information required for the written record.

OP 2.5 Class II Air Brake Test – Intermediate Inspection:

OP 2.5.1 Class II Air Brake Test – Application:

At a location other than the initial terminal of a train, a Class II Air Brake Test shall be performed by a Qualified Person (QP).

This test must be performed on the following equipment when added to the train:

- Each car, or solid block of cars that has not previously received a Class I Air Brake Test or that has been off air for more than four hours
- Solid blocks of cars comprised of cars from more than one previous train
- Solid blocks of cars comprised of cars from only one previous train, if the train has not remained continuously coupled, other than being uncoupled to remove defective equipment
- Solid blocks of cars comprised of cars from only one previous train separated into multiple solid blocks due to trackage constraints and not added in the same order as when removed from the previous train

OP 2.5.2 Class II Air Brake Test (Test Procedure):

Procedure for conducting a Class II Air Brake Test (Air Flow Method):

- A. Charge train to within 15 PSI of regulating valve setting, but not less than 75 PSI as indicated by end of train device or an accurate gauge at the rear of the train
- B. Air Flow Indicator must be at or below 60 CFM
- C. Make a 20-pound brake pipe reduction
- D. Brakes apply on each added car
- E. Brakes apply on rear car*
- F. Brakes release on each added car
- G. Brakes release on rear car*

Before proceeding, locomotive engineer must know that brake pipe pressure at the rear of the train is being restored.

* End of Train Device will be used to determine application and release on rear car if device indicates a reduction or increase of at least 5 PSI.

OP 2.6 Class III Air Brake Test – Trainline Continuity Inspection:

OP 2.6.1 Class III Air Brake Test (Application):

A Class III Air Brake Test will be performed on a train to test the train brake system when the configuration of the train has changed in certain ways.

Class III Air Brake Tests will be performed at the location where any of the following changes in the configuration of a train occur:

- Where a locomotive or End of Train Device is changed
- Where a car or block of cars is removed from the train, with the consist otherwise remaining intact
- At a point, other than the initial terminal for the train, where a car or solid block of cars is comprised from one previous train, the cars of which have remained coupled together with the Trainline remaining connected, other than for removing defective equipment since being removed from its previous train that has received a Class I Air Brake Test, and has not been off air for more than four hours
- At a point, other than that initial terminal for the train, where a car or solid block of cars that has received a Class I Air Brake Test or Class II Air Brake Test at the location, prior to be added to the train, and that have not been off air more than four hours
- When there has been public access to the train, public crossings have been blocked, or brake pipe continuity issues are suspected

OP 2.6.2 Class III Air Brake Test – (Test Procedure):

Procedure for conducting a Class III Air Brake Test:

- A. Charge train line air brake system to the pressure at which the train will be operated, but not less than 75 PSI
- B. Make a 20-Pound brake pipe reduction
- C. Ensure brakes apply on rear car*
- D. Release train brakes
- E. Ensure brakes release on rear car*

Before proceeding, locomotive engineer must know that brake pipe pressure at the rear of the train is being restored.

* End of Train Device will be used to determine application and release on rear car if device indicates a reduction or increase of at least 5 pounds

OP 2.7 Transfer Train and Yard Movements Less Than 20 Miles:

OP 2.7.1 Transfer Train Air Brake Test – Application:

A Transfer Train Air Brake Test may be conducted when a train meets the following criteria:

Transfer Train (49 CFR 232.2 Definition): A train that travels between a point of origin and a point of final destination, not exceeding 20 miles. Such trains may pick up or deliver freight equipment while enroute to destination.

OP 2.7.2 Transfer Train Air Test – Procedure:

Procedure for conducting a Transfer Train Air Brake Test:

- A. Ensure air brake hoses are coupled between all cars
- B. Charge train to not less than 75 PSI
- C. Make a 15-Pound brake pipe reduction
- D. Verify brakes apply on each car

Cars added to a transfer train enroute, will require the same requirements A-D as outlined in this rule.

OP 2.8 Trainline Kept Charged:

For a train to be considered as having been “kept charged,” the train brake pipe system must have had air pressure in its brake pipe at some time during the previous FOUR HOURS.

When cuts are made in a train, for example when cutting a crossing and train is recoupled in FOUR hours or less do the following:

Note that brake pipe pressure is being restored

In the absence of a rear car gauge or operative RED, a 20-Pound brake pipe reduction must be made and it must be determined that the brakes apply and release on the rear car.

OP 2.9 Locomotive Air Brake Test Procedures:

Conduct a locomotive air brake test when:

- Making up a locomotive consist
- Adding or removing units from a locomotive consist
- Changing operating ends

Procedure for conducting a Locomotive Air Brake Test:

From the ground, observe that the locomotive brakes apply and release during this procedure:

A. Independent Brake:

1. With the Independent Brake Handle and the Automatic Brake Handle in the RELEASE position, apply the independent brake
2. After the observing the brakes apply on each locomotive, release the independent brake

B. Automatic Brake:

1. Adjust the regulating value to the appropriate pressure
2. When the brakes are released on all locomotives, apply the automatic brakes by making a 10 PSI brake pipe reduction
3. After the brakes apply on all locomotives, move the Automatic Brake Valve Handle to RELEASE, and observe that the brakes release
4. Make a 20 PSI brake pipe reduction to reapply the brakes and observe they apply
5. Actuate the Independent Brake Valve Handle, and observe that the brakes release
6. Move the Automatic Brake Valve Handle to RELEASE

OP 2.10 Alerter Test:

After making a locomotive air brake test, Locomotive Engineers must arrange to do a functional test of the locomotive alerter device on locomotives equipped with an alerter. This test only needs to be performed on the controlling locomotive.

The following locomotives are equipped with Alerters:

- BRC 140
- BRC 210 – BRC 211
- BRC 230 – BRC 237
- BRC 560 – BRC 561

OP 3.0 – Train Equipment Operations and Train Handling

OP 3.0 Train Equipment Operations and Train Handling:

OP 3.1 End of Train Devices (ETD):

All trains will operate with a two-way ETD except:

- Trains with less than 4000 trailing tons, includes light engine consists
- Passenger trains
- Any type of train that does not exceed 30 MPH
- Trains with equipment that has the capability to initial an emergency brake application at the rear of the train (occupied caboose, locomotive at rear of train, passenger car)

OP 3.1.1 Locomotives Coupled to Cars with ETD Devices:

Locomotives or cars must not be coupled to any car end which has an End of Train Device when practicable.

When locomotives or cars must be coupled to a car which has an End of Train Device installed, trainman will be responsible for ensuring the End of Train Device is not struck by any portion of the locomotive or damaged in any way.

OP 3.1.2 ETD Equipment Inspection:

Locomotive Engineers, Conductors, Marker Men, and RCO's must inspect Head End Devices (HED) and End of Train Devices (ETD) at the on duty point, or point of installation, to determine that the date posted on the units is not older than 365 days.

OP 3.2 Two Way ETD Equipment:

Unless exempted from being equipped, as prescribed in OP 3.1, two-way ETD's must be armed and tested in accordance with Rules OP 3.2.1, OP 3.2.2, and OP 3.2.3 at the point of installation or prior to departure from the initial terminal.

They must remain armed and operable until the train reaches its final destination.

OP 3.2.1 ETD Arming Procedure:

1. The engineer must enter the five-digit ID Code
2. The engineer must advise the employee of the rear of train when "ready to arm"
3. The employee at the rear of the train must press and release the external test button
4. HED will indicate "SYSTEM ARMED" when successful

NOTE: A system not armed will be indicated by an alarm light and a message displaying "NOT ARMED."

OP 3.2.2 Brake Pressure Comparison (ETD):

Pressure indication accuracy shall be determined by comparing the brake pipe pressure value on the HED and the ETD. If the difference between the two devices varies by more than 3 PSI, the ETD may not be used.

OP 3.2.3 Emergency Brake Application Test Procedure:

To test an ETD, follow this procedure:

1. System must be armed as outlined in OP 3.2.1
2. Close angle cock between last car and ETD
3. Operate emergency brake switch on HED when requested
4. Observe HED for alarm light, audible alarm, low pressure message and brake pipe pressure drop to zero
5. At rear of train, observe the brake pipe pressure drop to zero, and listen for air exhaust

Restore angle cock between last car and ETD at conclusion of successful test.

OP 3.2.4 Enroute ETD Failure:

When a two-way ETD's capability to initiate an emergency brake application fails as indicated by any of the following messages displayed on the HED:

- FTOR Light On
- REPLBATT
- VALVFAIL
- FRNOCOM

Press the COMM ARM button to attempt to resolve the problem. If the conditions cannot be corrected:

- Speed of train must not exceed 30MPH until corrected

OP 3.3 Emergency Brake Applications:

An emergency brake application should be made without hesitation should any condition occur where is doubt of the ability to control train speed.

OP 3.4 Brake Valve Position After Emergency Brake Application:

Whenever an emergency brake application is made with the Automatic Brake Valve handle or emergency valve, the valve handle must be left in EMERGENCY position until the train stops.

OP 3.5 Maximum Braking Effort:

During emergency brake applications, maximum braking effort on the locomotive consist must be maintained by operating the Independent Brake Valve in such a way as to allow to the locomotive wheels to continue turning versus sliding.

OP 3.6 Undesired Emergency Brake Application (UDE):

In the event of an undesired emergency brake application (UDE) the Locomotive Engineer must place and leave the Automatic Brake Value handle in EMERGENCY position and operate Independent Brake to achieve maximum braking effort.

When a UDE occurs, the crew must determine the following conditions to determine whether inspection of the train will be required, GCOR Rule 6.23, as amended by Special Instruction applies:

- Brake pipe pressure is being restored, as indicated by the rear car gauge or End of Train Device
- No visible damage to the train is evident
- No harsh slack action occurred immediately prior to, or as a consequence of the UDE

If the brake pipe pressure is not being restored, or excessive power is required to start, immediately inspect the train.

OP 3.7 Two Way EOT Emergency Brake Application:

In the event that a train is placed in EMERGENCY, or a UDE occurs, the Locomotive Engineer must activate the emergency feature of the two-way ETD by using the manual toggle switch located on the HED.

OP 3.8 Use of Independent Brake:

Locomotive Independent Brake must not be used to slow or control train speed in excess of 15MPH.

This rule does not apply to light engine consists.

OP 3.9 Issues with Air Brakes:

Enginemen anticipating any difficulty or having any doubt about controlling trains with air brakes will request and be governed by the instructions of the Manager of Operating Practices or his/her designee.

OP 3.10 Train Control Issues:

When unusual difficulty has been experienced in controlling trains with air brakes, the incident must be reported to the Train Dispatcher and the MTO at first opportunity.

OP 3.11 Freight Car Air Brakes:

Each train must have the air brakes on all cars in operational condition, with the following exceptions:

- Cars with defective brakes found enroute may be handled to the next terminal where repairs can be made, provided that brakes are operative on not less than 85 percent of the cars in train.

If necessary to cut out brakes on defective cars, or pick up cars with defective brakes, not more than two consecutive cars with defective brakes will be permitted.

Conductors must report to Yardmaster on arrival at Clearing the number of cars in train with defective brakes, and where the cars are located in their train.

OP 3.12 Rear Car Air Brake Capability:

The rear car in a train must have operative air brakes.

OP 3.13 Reducing Train Overcharge:

To reduce an overcharge condition on a train, do the following:

1. Adjust regulating valve to drop equalizing reservoir 5 PSI
2. Place Automatic Brake Valve handle in SUPPRESSION position and when exhaust stops place handle in RELEASE
3. Allow system to recharge and repeat steps 1 and 2 until the desired brake pipe pressure is obtained

OP 3.14 Sticking Brakes:

To reduce the occurrences of sticking brakes, any brake pipe application of less than 10 PSI should be increased to that amount prior to attempting a release of the Automatic Brake Valve.

OP 3.15 Equipment with Hand Brakes Applied:

Under normal circumstances, hand brakes must be released prior to moving cars and locomotives.

OP 3.16 Railroad Crossing at Grade (Diamonds):

To minimize damage to locomotive traction motors, when moving at 20MPH or greater over a railroad crossing at grade, do the following:

- At least 8 seconds before the locomotive reaches the crossing, reduce the throttle to RUN 4 (or lower)
- Wait until entire locomotive consist passes over the railroad crossing before increasing throttle

OP 3.17: Unintentional Brake Release:

If an unintentional brake release occurs when train air brakes are applied, immediately increase the brake pipe reduction to at least 5 PSI below the last effective brake pipe reduction.

OP 3.18: Hot Journal Bearings:

A Qualified Mechanical Inspector must be consulted before moving the train whenever a hot journal is suspected, if a Temp-Stik crayon is not available.

OP 4.0 – Remote Control Operations

OP 4.0 Remote Control Operations:

All employees, who are engaged in the operation of remote control equipment are governed by and must have a current copy of these instructions accessible while on duty.

OP 4.1 Designated Abbreviations (Remote Control Operations):

| | |
|------------|--------------------------------|
| EBV | Electronic Brake Valve |
| OPP | Operating Parameter Programmer |
| PSP | Pullback Stopping Protection |
| RC | Remote Control |
| RCO | Remote Control Operator |
| RCS | Remote Control System |
| RCA | Remote Control Area |
| RCT | Remote Control Transmitter |
| OCU | Operator Control Unit |
| RSC | Reset Safety Control |
| RCL | Remote Control Locomotive |
| RCZ | Remote Control Zone |
| VSH | Variable Speed Humping |

OP 4.2 Operator's Manual and Equipment:

Remote Control Operators (RCO) will be issued an operator's manual, which governs the operation of a remote control system.

RCO(s) will be issued equipment, including a special vest to hold the remote control transmitter, lights and/or other equipment to assist in the performance of their duties. This equipment must be used for the intended purpose and as designed by the manufacturer.

Remote Control Transmitters (RCT) are considered a safety device.

Employees are prohibited from tampering with or disabling any remote control transmitter or safety feature, except as provided for in RCO rules.

All applicable rules and instructions contained in other company publications remain in effect unless specifically superseded by these instructions.

OP 4.3 Transfer of RCL:

Do not transfer control of the Remote Control Locomotive (RCL) to the other RCO until three-point protection, if activated, has been released, and a complete understanding of the movement has been discussed and acknowledged by both crew members.

OP 4.4 Handheld Radio:

Each RCO must have in their possession an operative, holstered handheld radio equipped with a wired microphone.

OP 4.5 Control of Movement:

When using a remote control locomotive in "pitch and catch" operations to make a coupling, the RCO located at the coupling must be the primary operator.

This does not prevent utility employees, not equipped as a RCO, from making the coupling or protecting a movement.

When coupling tracks, the crew member that is coupling cars must be in control.

The other crew member must notify the controlling crew member when the engine is within three (3) cars of fouling a lead.

Make couplings at a speed of not more than 2 MPH.

Remote Control Operator must use speed selection of not greater than "Couple". Do not use "Coast" and independent brake override to make car couplings.

OP 4.6 Set Up and Testing:

Before operating the locomotive in the Remote Control Mode, setup the equipment and perform required tests to be certain that the safety feature operation will respond properly to the OCU commands.

EACH RCO MUST OBSERVE THE TESTING OF BOTH OCU's.

- A. Setting Up a locomotive for remote operation requires the following five steps:
 1. Ensure Hand Brake is applied
 2. Setup the control stand for remote operation
 3. Setup the electrical control panel and cabinet
 4. Setup the train line air (if necessary)
 5. Setup the remote equipment

OP 4.6.1 Control Stand Setup (EBV):

- A. Setup the control stand using the following steps:
 1. Turn on radio, set to the required channel ensuring that the portable radios are on the same channel.
 2. Ensure engine run switch is in ON position

3. Ensure Control and Fuel Pump switch is in the ON position
4. Ensure Generator Field Switch is in OFF position
5. Set the Automatic Brake Valve to HANDLE OFF position.
6. Set Independent Brake Valve Handle to FULL APPLICATION position
7. Turn Mode Switch on EBV to indicate TRAIL
8. When EBV screen display the following message: MODE CHANGE;
MODE=TRAIL the automatic and independent brakes are now cut out
9. Set front and rear headlight controls to DIM position
10. Place throttle in IDLE position
11. Remove Reverser Handle

OP 4.6.2 Electrical Panel Set-Up:

- A. Setup the electrical control panel and cabinet in the following steps:
 1. Number, platform and running lights ON
 2. Set the MU Headlight switch to appropriate position
 3. Move the Isolation switch to RUN position.
 4. Move the Remote Control breaker to ON

OP 4.6.3 Control Stand Remote Control Shutdown:

1. Apply hand brakes on locomotive(s)
 2. Turn off both OCU's
 3. Set changeover switch to MANUAL
 4. Place isolation switches in START/STOP/ISOLATE position
 5. Return locomotive to LEAD MANUAL mode set up and secure locomotive, apply GCOR
- 7.6.1

OP 4.7 Hostling Locomotives:

Multiple locomotive consists may be moved within a terminal area with only the brake pipe connected, provided speed does not exceed 10 MPH.

Perform the following inspection and test before initial movement of locomotives coupled together and whenever locomotives are added or controlling locomotive is changed:

To couple consists, perform the following procedure:

- A. Brake pipe is connected and angle cocks are open between each locomotive
- B. Automatic brake valve must be cutout on all locomotives coupled together except the controlling locomotive
- C. Allow brake pipe to charge
- D. Perform a standing brake test as follows:
 1. Make a 10 psi service brake application.
 2. Ensure that sufficient locomotive brakes apply for safe movement.
 3. Note: Locomotives, that are shut down without the dead engine feature being cut in, may not apply.
 4. Release the automatic brake application

5. Ensure brakes release on each locomotive
6. Connect walkway chains
7. Release all hand brakes

OP 4.8 Remote Equipment Set-Up:

- A. Setup the on-board remote equipment in the following steps:
1. Set Radio Mode selector to appropriate controller position (A, A&B, B).
 2. Set changeover switch to Remote Control or remote mode.
 3. Push the appropriate **FREQ** key (F1, F2, or F3), see OP 4.8.1
 4. Push the appropriate assignment key (PROG A or PROG B).
 5. Power up the OCU.
 6. Hold the selected OCU (A or B) in front of the infra-red transceiver within 5 seconds.
 7. Recover Train Brake from both OCUs (if both A & B are used).
 8. Recover Emergency from both OCUs, "B" first (if both A & B are used).
 9. Test both OCUs individually:
 - Test RSC Feature
 - Test Tilt Feature

OP 4.8.1 RCO Radio Frequencies:

Locomotives must be linked by the assigned frequency in connection with the assignment being worked:

| <u>Location</u> | <u>Frequency</u> |
|-----------------------|------------------|
| East Yard Assignments | F1 |
| Hump Assignments | F2 |
| West Yard Assignments | F3 |
| Industry Assignments | F3 |

OP 4.9 RCL Alerter – RSC Test:

- A. Test the Reset Safety Control functionality using the following steps:
1. Place the Reverser selector on the OCU in Neutral position.
 2. Push the Reset button and immediately move the Speed selector to a Power position
 3. Wait 50 seconds and a pulse tone alarm sounds
 4. After approximately 10 seconds, an RSC fault will occur and a full service brake application will occur

OP 4.10 Tilt Test:

A. To perform a Tilt Test, test the "MAN DOWN" radio functionality using the following steps:

1. Tilt the OCU more than 45 degrees
2. After 1 second, the continuous tone alarm will activate
3. After approximately 4 seconds a "TILT TIME OUT" fault occurs, an Emergency Brake Application occurs, and a radio message will broadcast
4. To return to operation, return the OCU to upright position, then recover EMERGENCY from the OCU

OP 4.11 Testing RCL Safety Equipment:

- A. Perform a full RSC and TILT Test when initially setting up the equipment for remote operation
- B. When relieving a previous Remote Control Crew, and the system has remained in Remote Control Mode, perform a full RSC and Tilt Test, including the test of the "MAN DOWN" radio functionality using the radio message. In this specific case, both operators do not need to observe the test
- C. If an OCU becomes inoperative during a shift, and an OCU is replaced, a full RSC and TILT test must be performed. In this specific case, both operators do not need to observe this test.
- D. Release hand brakes on locomotive(s) and perform a running brake test

OP 4.12 "A" Operator Assignment:

During Remote Control Operations, the Conductor, must link up as the "A" operator.

OP 4.13 Remote Control Tag:

Each locomotive in the remote control consist must have a tag placed on the control stand, over the locomotive horn handle, or on the throttle indicating the locomotive is being used in a remote control mode. The tag must be removed when the locomotive is placed in manual mode.

Laminated tag reads:

"WARNING Locomotive in Remote Control"

OP 4.14 Operating the Equipment:

OP 4.14.1 Qualified Remote Control Operator:

Only qualified remote control operators or student remote control operators, who have been trained in Remote Control operations, may operate an OCU.

OP 4.14.2 Control of RCL Consist:

An RCO shall control only one RCL consist at a time with an OCU, and shall not operate any other RCL or manual mode locomotive simultaneously.

OP 4.14.3 Automobiles:

A RCO must not operate an RCL while in a moving or stopped automobile.

OP 4.14.4 RCO Performance of Duties:

Both employees of an RCO crew must wear their OCU at all times in the performance of duties.

OP 4.14.5 RCO Pitch and Catch:

Changing control of the Remote Control locomotive from one operator to the other is called Pitch and Catch.

To transfer control, use the following steps:

1. Bring movement to a stop
2. Set both OCUs to STOP position on the Speed selector
3. Set both OCUs to the same Train Brake selector position
4. Within 10 seconds of the Pitch command, the receiving (catching) operator presses the RESET (RSC) button
5. To verify control has transferred you may press the STATUS button. The corresponding radio message will give locomotive number followed by the OCU letter (i.e. BRC 581 A or BRC 581 B)
6. Ensure all crewmembers understand which operator is controlling movement

Note: To cancel a Pitch, the controlling operator need only make a command before the other operator catches control (i.e. Press the RSC button).

OP 4.14.6 OCU Fasteners:

When the RCO secures the Operator Control Unit (OCU) to his vest, the OCU must be fastened, with the approved fasteners, at all four points. All straps must be adjusted so as not to restrict or disable the tilt feature. The straps and fasteners are considered a safety device

OP 4.14.7 Tilt Messages (CRITICAL SAFETY ACTIVITY):

In the event an OCU "TILT TIME OUT" unsolicited message is heard, excluding messages heard during start up tests, **IMMEDIATE** action must be taken to verify the status of the operator who caused the tilt fault to occur.

The broadcast of a "TILT TIME OUT: is considered an emergency radio transmission.

During yard and hump operations, a crew member will be responsible for contacting the RCO who caused the tilt fault.

The Yardmaster will also be responsible for contacting the RCO verifying safety status.

If the RCO who caused the tilt fault does not immediately respond, the Yardmaster will be responsible for **IMMEDIATELY** stopping all movement in the yard and taking the proper emergency actions.

During industry assignment and work train service, a crew member will be responsible for contacting the operator who caused the tilt fault to determine the RCO's safety status.

OP 4.14.7.1 Tilt Messages (Non-Emergency):

In the event an OCU TILT TIME OUT message is heard and a Non-Emergency Situation occurs, the RCO involved must immediately contact a crew member advising that a non-emergency took place. The Yardmaster must be immediately contacted in the event that the crew member does not acknowledge.

OP 4.14.8 Disabled RCL Devices:

Employees are prohibited from knowingly using a remote control transmitter (RCT) with a disabled safety device.

OP 4.14.9 Light Remote Controlled Locomotive Consists:

The RCO must take a position on the leading end of a light remote control locomotive consist, outside the locomotive cab, or be positioned on the ground clear of the movement, able to observe the entire movement before initiating the movement.

Exceptions:

Single locomotive traversing a clear track:

- Primary Operator must return to the leading end of a light remote control locomotive consist, outside the cab, 250 feet in advance of any switch or signal

Multiple locomotive consists, including hump slug combinations, traversing a clear track:

- Occupied locomotive must be the lead locomotive facing the direction of movement. Primary Operator must return to the leading end of a light remote control locomotive consist, outside the cab, 250 feet in advance of any switch or signal

OP 4.15 Securing Remote Control Equipment:

OP 4.15.1 Spare OCU Handling:

Spare OCUs must not be stored, either while set up (linked to) or while communicating with a RCL.

OP 4.15.2 Unattended Equipment:

When leaving equipment unattended for short periods (meal period, securing paperwork, etc.) the RCO must secure the RCL by turning off both OCUs, apply hand brake(s) on the locomotive(s) and isolate the locomotive(s).

OP 4.15.3 RCO Crew Going off Duty:

When going off duty, the RCO must secure the RCL by turning off both OCUs, apply the hand brake on the locomotive(s) and place the locomotive isolation switches in the START/STOP/ISOLATE position. In addition, complete all steps to return the locomotive to the Lead Manual mode setup and comply with current locomotive securement rules.

- Apply GCOR 7.6, GCOR 7.6.1 and OP 4.6.3

OP 4.16 Remote Operating Procedures – General:

OP 4.16.1 Assignment of OCU:

Remote Control OCU's will be assigned to a crew by the Yardmaster on duty. The Yardmaster will record the number of the OCU issued for each crew member in the OCU Management Program. The number is on the bottom of the OCU.

The OCU's will be issued and returned to the Yardmaster inside the Yardmaster's Yard Office in clear view of the security camera in the office. It is the Yardmaster's responsibility to keep the OCU's inventory inside the Yardmaster's Yard Office until issued to the next RCO.

OP 4.16.2 OCU Batteries:

Employees are responsible for the OCU batteries they remove from a charger.

OCU Batteries, after work is complete, must be returned to the

OP 4.16.3 Flat Spots:

To prevent excessive wheel slip, and potential damage to equipment, Independent brake override, except in an emergency situation, is not to be used as the primary stopping method.

OP 4.16.4 Cleaning Switches:

The following procedures are in effect when required to clear switches of snow and ice while operating in remote control:

- Establish three-point protection
- Connect the air wand hose to the brake pipe
- Place the Automatic Train Brake selector on OCU in the charge position
- Hold the wand firmly, open the angle cock on the brake pipe, and open the angle cock on the air wand

Note: Expect the locomotive will increase to maximum RPM, thus maintaining brake pipe pressure while utilizing the air wand

- Leave the Automatic Train Brake selector on the OCU in the "CHARGE" position until the switch is cleared
- Once switch is cleared, release three-point protection and resume normal operations

OP 4.16.5 Snow Brake Feature:

Each RCL is equipped with a snow brake feature. When required to activate the snow brake, the following procedures will apply:

- Depress the snowflake button on the Operating Parameter Programmer (OPP) Station keypad and ensure that the LED above the small snowflake symbol is illuminated
- To deactivate, depress the snowflake button on the keypad, and ensure that the LED above the small snowflake is off

Note: When the snow brake feature is activated, a brake cylinder pressure of 6 PSI. will be maintained with the brakes released. This will aid in preventing a buildup of snow and ice between the wheels and brake shoes on the locomotive.

OP 4.16.6 Over-riding PSP:

Procedure for Overriding Pullback Stopping Protection (PSP):

PSP Override mode is engaged by pressing the <<MENU>> button on the OPP console and pressing the <<OK>> button when "PSP Override" is displayed.

The OPP will then ask you to press the Bell button on the controlling or the non-controlling OCU within 5 seconds to confirm the PSP Override.

OP 4.16.7 Verification of PSP:

The RCO must verify the PSP is working before depending on the PSP to stop the movement. On the initial movement into the PSP limits, the RCO must monitor the remote control transmitter message to verify the PSP is functioning as intended.

OP 4.16.8 Over-Riding PSP:

Point protection is required when RCO manually overrides the PSP equipment, apply GCOR 6.5 as amended by SSI.

OP 4.17 RCL Hump Assignments:

OP 4.17.1 Pitch Control (Hump Assignments):

Pitching control instructions for the Hump

- While working on the hump, crew members must inform each other which direction the locomotive is facing when pitching control to each other
- When sending the locomotive down a hump approach track to the other crew member; the crew member pitching control must let the crew member receiving control know that the locomotive is moving in the right direction

OP 4.17.2 Handling Trains with Air (Hump Assignments):

The Automatic Train Brake is to be utilized as the primary stopping method when handling trains or cuts of cars with the train line cut in.

The Automatic Train Brake feature is to be used in conjunction with the Speed Selector.

When humping cars or handling cars on a grade, the Automatic Train Brake switch must be positioned to either the LIGHT or MEDIUM position while placing the Speed Selector to Stop.

The RCO must ensure all buff or draft forces (slack) have settled before any attempt to start the movement is made.

If necessary to assist starting movement on a grade or in the event of a lift fault, depress and hold either of the RSC buttons to apply sand to the rail. Release the RSC buttons once the train begins moving.

OP 4.17.3 Assisting Stalled Trains or Trains Occupied by Crew:

- Reference BRC Operating Practices (OP-1) rules
- Movement will take place only after all parties have confirmed they are prepared for movement
- Speed must be gradually increased until rear of train is moving
- If an occupied locomotive is on the rear of train, confirmation must be received from the occupant that rear of train is moving

OP 4.17.4 Remote Control Speeds:

Speed Lever Adjustments with Operating Speeds:

- MAXIMUM 15 mph
- POSITION 10 10 mph
- POSITION 7 7 mph
- POSITION 4 4 mph
- COUPLE SPEED 1 mph
- HUMP FAST
- HUMP SLOW

OP 4.17.5 Variable Speed Humping:

Variable Speed Humping is to be utilized as the preferred method of handling cuts in connection with humping cars.

1. All crew members must know which mode of operation will be used prior to humping each train.
 2. Once hump speed is attained and regulated, controlling operator to pitch control to the hump computer. The OCU will beep and speed indicator lights will flash when the pitch is successful. The system will then broadcast "VSH ON" over the radio. OCU operator must advise the Hump Conductor the pitch has been made and the computer has control of the speed.
 3. Hump computer will control and adjust the speed of the locomotive to accommodate the humping of cars
 4. Train movement may be stopped by the RCO, Hump Conductor, or Hump Control system
 - Control is pitched back to the OCU after any stop
 - RCO may stop movement by moving the speed lever or activating any other command on the OCU box
 - All OCU penalty applications and safety features remain active
- NOTE: The system will broadcast "VSH OFF" whenever the variable speed humping process is stopped in one of these methods.
5. Yardmaster must be advised of any problems and delays associated with humping cars utilizing the VSH system.

NOTE: Yardmaster must advise the Operational Trainmaster if it becomes necessary to revert from Variable Speed Humping to traditional hump operation.

OP 4.18.0 Special Operating Procedures (RCL) – BRC Yards:

THIS SECTION INTENTIONALLY LEFT BLANK

OP 4.19.0 Operating Procedures (RCL) - Industry Assignments and Work Trains:

THIS SECTION INTENTIONALLY LEFT BLANK

OP 5.0 – Special Equipment:

OP 5.1 M/W Equipment (Cranes, Derricks, and Company Material Cars):

Air brakes must be used when switching cranes, derricks, or other company material (M/W) cars

Hand brakes must be applied and wheels skated, when necessary, when company material cars are left unattended.

When handling cranes, they should, whenever possible, be placed at the rear of the train, boom trailing.

Restrictions for handling M/W equipment will be provided by Engineering Department Managers.

OP 5.2 Scale Test Cars:

When handling scale test cars, determine whether the cars are equipped with air brakes, or train line air without brake appliances.

When handling scale test cars that have train line air connections, but no air brake equipment, do not handle as rear car of train. Scale test cars that meet these criteria must be handled as the second rear car in the train, this will insure that they will have braking capability in the event of a train separation.

OP 6.0 – Operating Practice Definitions:

Actuate:

Process of moving the Independent Brake Handle down (26-L Brake Equipment), or moving the Independent Brake Handle to the right for 6 seconds per locomotive in a locomotive consist to prevent an Automatic Brake Application from applying the brakes, or to release the brakes from an Automatic Brake Application

Adhesion:

The coefficient of friction between the rail and the rail as the car or locomotive accelerates. Adhesion is the direct indicator of the amount of turning force the wheel can impart on the rail before wheel slip occurs.

Air Compressor:

A device on the locomotive for compressing the air used in operating the air brake, and all other air-operated appliances on both the locomotive and cars.

Air Flow Indicator:

An instrument that indicates the amount of air flow thru the Automatic Brake Valve to the brake pipe.

Angle Cock:

An appliance used to open and close the brake pipe on the ends of the locomotive and cars. Angle cocks are open when the handle is parallel to the pipe and closed when the handle is at a right angle (perpendicular) to the pipe.

Automatic Air Brake System:

An arrangement of equipment on locomotives and cars with the piping and reservoirs necessary for its operation, which upon a reduction of brake pipe pressure, regardless of how initiated, will automatically apply the brakes. An increase in brake pipe pressure above auxiliary reservoir pressure will cause a release of brakes.

Automatic Brake Valve:

A manually operated valve located at the engineer's control station which controls the flow of compressed air into and out of the equalizing reservoir and brake pipe.

Automatic Brake Valve Cutout Valve:

A valve used to cut the automatic brake valve in or out

Automatic Drain Valve:

A valve which automatically drains condensation from locomotive air reservoirs.

Auxiliary Reservoir:

A storage volume for compressed air found on locomotives and cars which is charged from the brake pipe, and provides air pressure for service and emergency brake applications.

Bleed:

The venting of air pressure to atmosphere.

Brake Application:

A sufficient reduction of brake pipe pressure (regardless of cause) to cause the control valve to move to applied position, which, if made in the service portion of the automatic brake valve, may consist of more or more reductions.

Brake Cylinder Release Valve:

A valve designed to bleed brake cylinder pressure without draining auxiliary and emergency brake reservoirs.

Brake Pipe:

The pipe, angle cocks, hose, and host coupling used to distribute compressed air throughout a train.

Brake Pipe Vent Valve:

A valve used to locally vent brake pipe air pressure to ensure a rapid drop of brake pipe pressure throughout a train.

Buff Force:

A term used to describe compressive coupler forces in a train (Slack Bunched)

Coefficient of Friction:

The ratio between the braking force provided by brake cylinder pressure and the resulting retarding force of the brake shoe at the wheel.

Continuity Test:

Used on trains with an operative rear end device, determines that brake pipe pressure rises by a minimum of 5 PSI to determine all angle cocks are properly positioned.

Cycle Braking:

A method of applying and releasing the train brakes to control speed without a complete recharge of the train brake system.

Draft Force:

A term used to describe stretched coupler forces in a train. (Slack Stretched)

Draft Gear:

A shock cushioning device that transmits buff or draft forces between the coupler and the car or locomotive frame.

Dead Engine Feature:

Equipment in the air brake system of a locomotive which will allow charging of the No. 2 main reservoir from the brake pipe when a locomotive is shut down and its compressor is not working.

Drawbar Forces:

Forces at the coupler between cars and/or locomotives. These may be either buff or draft forces dependent on train operation.

Dynamic Brake:

A means of electrically converting some of the energy creating by momentum of a moving locomotive into an effective retarding brake. (BRC locomotives are not equipped with dynamic brakes).

Emergency Application:

A rapid rate of brake pipe drop which will cause control valves to go into emergency position resulting in higher brake cylinder pressure and faster propagation through a train.

Emergency Brake Valve:

A valve found on locomotives, cabooses, passenger cars, and some work equipment used to initiate an emergency brake application.

Emergency Reservoir:

A storage volume for compressed air found on cars which is charged by the brake pipe and provides air pressure for emergency brake applications and certain recharge features.

End of Train Device / 2 Way (ETD):

Equipment consisting of a Head End Device (HED) and Rear End Device (RED). The RED will monitor rear car brake pipe and transmit this information to the HED in the locomotive cab. The HED provides a display for the engineer of this information. The HED also has provisions to allow an emergency brake application to be sent to the RED.

Equalizing Reservoir:

A small reference volume on the locomotive used in making service brake applications.

Full Service Brake Application:

A service reduction of brake pipe pressure which will cause equalization of pressure in the brake cylinder with the pressure in the auxiliary reservoir.

Grade:

The inclination of railroad track measured by the number of feet of rise or fall in 100 feet of distance. Expressed as a percentage.

Harmonic Rocking:

Excessive lateral rocking of cars and/or locomotives, usually at speeds between 13 and 21MPH on jointed rail.

Independent Brake Valve:

A valve to operate the air brakes on the locomotive independently of the train brakes.

Jackknifing:

A condition involving two coupled rail cars in which there is excessive center sill misalignment. Usually caused by excessive buff force.

Main Reservoir:

Reservoir on the locomotive used for storage, cooling and drying the supply of compressed air.

Minimum Reduction:

A 5 to 7 PSI service brake pipe reduction. This reduction matches a Quick Service Reduction on cars, minimizing in-train forces caused by the actions of the automatic brake valve.

MU2-A Value:

A value located in the locomotive cab which cuts the independent brake value in or out.

Multiple Unit (MU) Connections:

Hoses and cocks at both ends of locomotives for connecting the air brake equipment in multiple locomotives to permit operation from a single control.

- a. Actuating (ACT) MU Connection, provides a means to release locomotive consist automatic air brakes using the main reservoir air brake pressure
- b. Independent Application and Release (IAR) MU connection provides a means of controlling independent brakes from a single control.
- c. Main Reservoir (MR) MU connection provides for equalization of main reservoir air pressure between locomotives.

Overcharge:

Condition occurring when brake equipment or cars and/or locomotives is charged to a high pressure than the regulating valve setting.

Over-Reduction:

A service brake pipe reduction to a pressure lower than the equalization pressure between the auxiliary reservoir and the brake cylinder(s).

Penalty Brake Application:

An automatic service brake application caused by the operation of a safety control device, i.e. PTC, Cab Signals, Alerter.

Propagation:

The serial action of a brake application from car to car through a train.

Quick Service:

The local venting of brake pipe air at each car which occurs any time the control valve moves from a release to applied position.

Regulating Valve:

A part of the 26L Automatic Brake Valve which reduces main reservoir pressure to the pressure desired in the equalizing reservoir as determined by use of an external adjustment handle.

Retaining Valve:

A manually operated valve located on every freight car by means of which a portion of the air pressure in the brake cylinder may be held while recharging the train brake system.

Run-In:

Rapid change of coupler slack in a train (Buff Force).

Run-Out:

Rapid change of coupler slack in a train (Draft Force).

Running Release:

Release of a train brake application while a train is in motion.

Safety Valve:

A valve designed to open at a predetermined pressure setting, thus preventing an accumulation of pressure in excess of what is prescribed.

Service Brake Application:

A reduction in brake pipe pressure at a controlled rate, sufficient to cause the control valve to move to service position.

Service Rate of Reduction:

A decrease in brake pipe pressure at a rate sufficiently rapid to move the control valve on locomotives and cars to service position, but not so rapid as to move the valve to emergency position.

Slack Action:

Movement of part of a coupled train at a different speed than another part of the same train.

Split Reduction:

A 5 to 7 PSI brake pipe reduction followed by an additional brake pipe reduction.

Stretch Braking:

A term used to describe the slowing or stopping of a train using the automatic brakes and only enough power to maintain a slack stretched condition.

String-lining:

Tendency of cars to pull off the inside of curves, trying to approach a straight line, as a result of excessive draft force.

Tons Per Operative Brake:

The result of dividing the gross trailing tonnage of the train, not including locomotives, by the total number of cars with operative air brakes.

Two Compartment Reservoir:

The component on cars which contains both the auxiliary and emergency reservoirs.

Transfer train (49 CFR 232.2 Definition):

A train that travels between a point of origin and a point of final destination, not exceeding 20 miles. Such trains may pick up or deliver freight equipment while enroute to destination.

Undesired Emergency (UDE):

An emergency brake application from an unknown origin.

OP 7.0 – Air Brake Test and Mechanical Forms:

OP 7.1 Non-Complying Locomotive Tag:

Form 2321 – Non Complying Locomotive Tag:

THE BELT RAILWAY COMPANY OF CHICAGO
NON-COMPLYING LOCOMOTIVE

Locomotive Number _____ Inspection Location _____ Inspector Date _____

Nature of Defect: _____

Movement Restrictions: State any speed or other restrictions placed on the locomotive. If no restrictions, write in the word... "NONE"

Destination Station _____ Inspector's Signature _____

Form 2321

OP 7.2 Record of Class I Air Brake Test:

OP 7.3 Bad Order Tag:

Form 2108, Bad Order Tag:

THE BELT RAILWAY COMPANY OF CHICAGO

BAD ORDER

DATE B.O. 20 TIME _____

DEFECTS _____

LOAD _____
EMPTY _____
POOL _____
MARK _____

INITIAL _____ NUMBER _____ TRACK _____ YARD _____

CORNERED _____ SIDESWIPE _____ DERAILED _____ INSPECTOR _____

FORM 2108 (REV. 1/10)

SO STATE - When damage is due to Derailment
- Corning - Sideswiping or other
handling the responsibility.