NATIONAL RAILROAD
PASSENGER CORPORATION-

AIR BRAKE AND TRAIN HANDLING RULES AND INSTRUCTIONS

These instructions govern the testing and operation of air brake and other equipment on Amtrak trains and must be observed by all employees whose duties are in any way affected by them.

These instructions apply to all Train and Engine service employees, QP'S, QMP'S, QMI'S, Mechanical employees, certain Engineering employees, Yardmasters, and Supervisors. Amtrak employees governed by these instructions are not governed by the air brake and train handling rules/instructions of Host Railroads. The Host Railroads listed below have additional rules and instructions which modify Amtrak's AMT-3. These instructions are printed in text boxes included in the applicable AMT-3 rule or instruction and identified by the Host Railroad name.

Burlington Northern Santa Fe
CSX Transportation
Norfolk Southern
Union Pacific

Employees whose duties require that they understand and comply with these instructions must attend the required classes.

Employees who are governed by these instructions will be provided with a copy, must maintain same and have it with them while on duty.

This document is divided into three (3) major sections: (1) All Operations, (2) Passenger Operations and (3) Non-Passenger Operations

[redacted]

Jonathan A. Hines
System General Road Foreman

[redacted]

Mark Bagosy
Superintendent Mechanical
Equipment Standards & Compliance

Effective January 28, 2013

IT STARTS WITH EMPLOYEES

SAFE 2 SAFER

focus

TABLE OF CONTENTS

Section	ALL OPERATIONS SECTION	Page
1.0	GENERAL	6
1.1	Definitions	6
1.2	Standard Air Pressures	13
2.0	LOCOMOTIVES	14
2.1	Employee Responsibility – Locomotive Inspection, Testing and Documentation	14
2.2	Locomotive Calendar Day Inspection Procedure When Performed By Engineer	17
2.3	Locomotive Departure Test	22
2.4	Mechanical Department Locomotive Air Brake Daily Inspection.	24
2.5	Locomotive Air Brake Test	26
2.6	Locomotive Running Brake Test	26
2.7	Locomotive Defects Discovered En-Route At Other Than Calendar Day Inspection Point	26
2.8	Independent Brake Operation	33
2.9	Double Heading And Helper Locomotives	33
2.10	Dead Locomotive(s) In A Train	33
2.11	Charging A Train	33
2.12	Use Of Sand	33
2.13	Recovery From Penalty Application	33
2.14	Locomotive Air Brake And Equipment Set Up	34
2.15	Sealing Of Protective Devices On Locomotives	34
2.16	Lite & Multiple Lite Locomotive Movements	34
2.17	Failure of Locomotive Air Brakes	35
2.18	Emergency Application - Locomotive	36
3.0	TRAIN MAKE UP	36
3.1	General	36
3.2	Graduated Release Operation	37
3.3	Direct Release	37
3.4	Cutting Off Car(s) Or Locomotive(s)	38
3.5	Securing Equipment	38
4.0	BRAKE TESTS / EQUIPMENT INSPECTIONS	41
5.0	TRAIN HANDLING	42
5.1	General	42
5.2	Trains Other Than Mixed Consist	43
5.3	Mixed Consist (Including Work, Wreck, and Wire Trains)	43
5.4	Back-Up Moves	45
6.0	EN ROUTE CONDITONS	47
7.0	TRAIN CONTROL SYSTEMS	47
7.1	General	47
7.2	Automatic Train Control System (ATC)	70
7.3	Automatic Train Stop (ATS); IITS – Intermittent Inductive Train Stop	74
7.4	Advanced Civil Speed Enforcement System (ACSES)	77
7.5	Incremental Train Control System (ITCS)	81
7.6	SPEEDDOMETER OVERSPEED SYSTEM	84
8.0	TWO-WAY END-OF-TRAIN DEVICE	84

9.0 EQUIPMENT INSTRUCTIONS 84
9.1 General Instructions 84
9.2 Equipment Speeds 86
9.3 Locomotive And Car Bearings 87
9.4 Locomotives, Cars and Other Equipment 94
9.5 HEP 97
10.0 SW ITCHING (YARD SERVICE) 98
10.1 Switching 98
11.0 Mechanical Department Periodic Brake Maintenance Requirements 99
11.1 Periodic Brake Maintenance Requirements for Equipment in Passenger Service 99
11.2 Periodic Brake Maintenance Requirements for Equipment in Freight or Non Passenger Service 100

PASSENGER OPERATIONS SECTION

P1.0 GENERAL 103
P2.0 LOCOMOTIVES 103
P3.0 TRAIN MAKE UP 103
P4.0 BRAKE TESTS / EQUIPMENT INSPECTIONS 103
P4.1 General 103
P4.2 Train Brake Tests & Inspection 106
P5.0 TRAIN HANDLING 112
P6.0 EN ROUTE CONDITIONS 113
P6.1 General 113
P6.2 Movement Restrictions 114
P7.0 TRAIN CONTROL SYSTEMS 119
P8.0 TWO-WAY END-OF-TRAIN DEVICE 119
P8.1 Two-Way End-Of-Train Device 119
P9.0 EQUIPMENT INSTRUCTIONS 123

NON-PASSENGER OPERATIONS SECTION

NP1.0 GENERAL 126
NP2.0 LOCOMOTIVES 126
NP3.0 TRAIN MAKE UP 126
NP4.0 BRAKE TESTS / EQUIPMENT INSPECTIONS 126
NP4.1 General 126
NP4.2 Train Brake Tests & Inspection 127
NP5.0 TRAIN HANDLING 133
NP6.0 EN ROUTE CONDITIONS 133
NP6.1 General 133
NP6.2 Movement Restrictions 134
NP7.0 TRAIN CONTROL SYSTEMS 135
NP8.0 TWO-WAY END-OF-TRAIN DEVICE 135
NP8.1 Two-Way End-Of-Train Device 135
NP9.0 EQUIPMENT INSTRUCTIONS 139
Tables and Forms 140
Mechanical Standards 159

ALL OPERATIONS
Section

NATIONAL RAILROAD
PASSENGER CORPORATION

ALL OPERATIONS
Section

The instructions in this section apply to BOTH PASSENGER and NON-PASSENGER OPERATIONS

1.0 GENERAL

1.1 Definitions

AAR: The Association of American Railroads.
ACTUATE: A term used to indicate the release of locomotive brake cylinder pressure that develops as a result of an automatic brake application.
AFTER COOLER: Radiating piping, which cools compressed air before it flows to the brake system.
AIR BRAKE: A combination of parts operated by compressed air and controlled manually, pneumatically or electronically, which will slow or stop a car or locomotive.
AIR BRAKE INSPECTION AND TEST CERTIFICATE: The standard form is a MAP 1173. This written certification indicates that air brakes have been properly tested and inspected and must include the following information:

(1) All locomotives – including cab cars that will be used to operate train
(2) Number of cars inspected
(3) Date
(4) Time
(5) Location tested
(6) Name & Signature of Qualified Person who performed the test
(7) Selector volume handle position
(8) Interior/Exterior Inspection
(9) Communication signal status
(10) GRA/DIR release status
(11) EOT tested
(12) Total Train Weight and Length- Non-Passenger Only
(13) Any special weight distribution requiring special train handling- Non-Passenger Only
(14) 10C Summary portion

The Summary MAP 1173/10C is the form issued when a Passenger Class I brake test is performed at the originating point or a scheduled Class I brake test location for the train. When multiple MAP 1173 forms are issued only one will be used as the “Summary” form and will be indicated by writing the word “Summary” at the top of the form (see P4.1.4A.10). Engineer must list defective car number(s) on reverse side of Summary MAP 1173 indicating condition EN ROUTE and initialize form.

The 10C Summary is used by the mechanical department to list cars in a passenger train consist that received a calendar day inspection. The 10C Summary is part of MAP 1173/10C Summary form. A train MUST not be delayed for missing or conflicting information on 10C summary or missing MAP 10C Summary.

AIR COMPRESSOR: A rotary or reciprocating device for compressing air.
AIR GAUGE: An instrument that indicates the amount of air pressure.
AIR RESERVOIR: A reservoir found on some passenger, freight and locomotive brake systems for storing a supply of air.
ALERTOR: A device, which detects frequency of movement of the Engineer and initiates a penalty brake application when required frequency of movement is not maintained.
ANGLE COCK: A device used to open and close the brake pipe on locomotives and cars. To open, move the handle in line with the brake pipe. To close, move the handle at a right angle (crosswise) to the brake pipe. Note that these positions are the opposite of other cut-out cock positions.
AUTOMATIC BRAKE VALVE (ABV): A manually operated device positioned by the Engineer to control the flow of air into the brake pipe for charging, applying and releasing the automatic brake system on each car or locomotive.
AUTOMATIC DRAIN VALVE: An automatic device, which assists in draining condensation from the compressed air system.
AUTOMATIC SLACK ADJUSTER: A device to maintain brake cylinder piston travel within a predetermined range.
BACK UP HOSE: A device consisting of a manually operated valve with a warning whistle, length of hose and standard brake pipe hose coupling. When properly coupled to the brake pipe hose on the leading end of a car or cars being pushed, provides a means of sounding a warning whistle and/or applying the brakes in emergency.
BIND: Restrict the intended movement of one or more brake system components by reduced clearance, by obstruction, or by increased friction.
BLENDED BRAKE: Simultaneous use of air and dynamic braking, controlled by the automatic brake valve and mixed automatically, to provide a retarding force on engines and self-propelled cars.
BLOCK OF CARS: One car or multiple cars in a solid unit coupled together for the purpose of being added to or removed from a train as a solid unit.
BRAKE APPLICATION (AUTOMATIC): A reduction of brake pipe pressure of sufficient amount to cause the control valve to move to the service or emergency position, which, if made in the service position (or zone) of the ABV, may consist of one or more reductions. A BRAKE APPLICATION IS NOT COMPLETED UNTIL BRAKE PIPE EXHAUST HAS COMPLETELY STOPPED.
BRAKE CYLINDER: A cylinder in which compressed air acts on a piston that transmits the force of the compressed air to the associated brake rigging.
BRAKE CYLINDER PRESSURE LIMITING VALVE: A feature built into the 26-C or 26-F control valve, which limits service and emergency brake cylinder pressure to a predetermined amount.

BRAKE CYLINDER RELEASE VALVE: A manually operated valve on freight brake equipment, which permits the brake cylinder to be released without draining the reservoirs.

BRAKE, EFFECTIVE: A brake that is capable of producing its required designed retarding force on the train. A car's air brake is not considered effective if it is not capable of producing its designed retarding force or if its piston travel exceeds;(a) 10 ½ inches for cars equipped with nominal 12-inch stroke brake cylinders; or (b) the piston travel limits indicated on the stencil, sticker, or badge plate for that brake cylinder.

BRAKE INDICATOR: A device actuated by brake cylinder pressure (light or plunger), which indicates whether brakes are applied or released.

BRAKE PIPE: The system of piping including branch pipes, angle cocks, cut-out cocks, dirt collectors, hose and hose couplings, used for connecting locomotives and cars for the passage of air to control the locomotive and car brakes.

BRAKE PIPE CUT-OFF (PILOT) VALVE/SWITCH: Manually operated device used to cut in or cut out the ABV on 26, 30 or E-Brake equipment.

BRAKE PIPE VENT VALVE: A device connected to the brake pipe, which propagates an emergency brake pipe reduction by rapidly venting the brake pipe pressure locally.

BRAKE, PRIMARY: Those components of the train brake system necessary to stop the train within the signal spacing distance without thermal damage to friction braking surfaces.

BRAKE, SECONDARY: Those components of the train brake system which develop supplemental brake retarding force that is not needed to stop the train within signal spacing distances or to prevent thermal damage to wheels.

BRAKE SYSTEM: Includes all brake apparatus such as air, electro-pneumatic, electronic brake, related piping, hand brake, foundation brake rigging and dynamic brake.

BRAKE TESTS, TYPES:

PASSENGER:

- Class I : Complete passenger train brake system test & inspection performed by a QMP to ensure air brake system is 100% effective. This test fulfills the requirements of a Passenger-Class IA and a Passenger-Class II brake test.
- Class IA : Test & inspection performed by QP or QMP to ensure that brakes apply and release on each car in a passenger train in response to train line commands. This test fulfills the requirements of a Passenger-Class II brake test.
- Class II : Test & inspection performed by QP or QMP to determine brake pipe integrity and continuity from the controlling locomotive to the rear passenger equipment of a passenger train.

NON-PASSENGER:

- Class I : Complete non-passenger train brake system test & inspection performed by a QP or QMI to ensure air brake system is 100% effective. This test fulfills the requirements of a Non-Passenger-Class IA, Non-Passenger Class II, and a Non-Passenger-Class III brake test.
- Class II : Test & inspection performed by QP or QMI to ensure that brakes apply and release on each car in a non-passenger train in response to train line commands. This test fulfills the requirements of a Non-Passenger-Class III brake test.
- Class III : Test & inspection performed by QP or QMI to determine brake pipe integrity and continuity from the controlling locomotive to the rear equipment of a non-passenger train.
- Transfer Train : Test & inspection performed by QP or QMI to ensure that brakes apply and release on each car in a non-passenger train which is a transfer train.

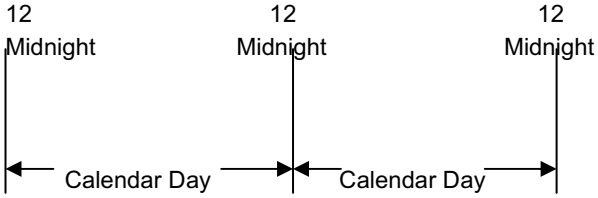
PASSENGER & NON-PASSENGER

- Running Brake Test : A test performed by a locomotive engineer while the train is in motion to verify that the brake system functions as intended.

BUFF FORCES: The forces caused by compression such as during dynamic or independent braking, helper locomotive on rear of train, back-up movements or run-in of slack.

CAB CONTROL CAR: A Passenger Carrying Car equipped with a control compartment from which a train can be operated while being pushed by a locomotive. A cab control car is considered a locomotive when it is the controlling locomotive.

CALENDAR DAY: A time period running from one midnight to the next midnight on a given date.



CHARGING CUT-OFF PILOT VALVE (A-1): Provides the following features during an emergency application of brakes: automatic sanding, dynamic brake cut-off, power knock out (PCS) and cuts off brake pipe charging.

CHECK VALVE: A device so designed that it permits air to flow in one direction while preventing the air from flowing in the opposite direction.

CHOCK: A wedge or block of sufficient size used to block the movement of a wheel (holding a wheel motionless).

CLASP BRAKE: An arrangement of brake rigging in which two brake shoes per wheel are used to clasp the braking surface.

COMMUNICATING SIGNAL SYSTEM: A manually operated device used to transmit an electronic signal to the operating cab. If electronic communication signal system is inoperative or not equipped, operative two-way radio system may be substituted.

COMPRESSOR GOVERNOR: A device to automatically control the operation of an air compressor.

COMPUTER CONTROLLED BRAKE (CCB): Microprocessor locomotive air brake control system commonly referred to as E-Brake.

CONTROL VALVE: A device on locomotives and cars which charges reservoirs and acts to apply and release brake cylinder pressure in response to a reduction or increase of brake pipe pressure.

Direct Release:

A feature of the control valve that provides for the total release of brake cylinder pressure when brake pipe pressure is increased.

Graduated Release:

A feature of the control valve that provides for the incremental release of brake cylinder pressure proportionate to increases in brake pipe pressure.

CONTROLLING LOCOMOTIVE: The locomotive from which the engineer exercises control over the train.

CUTOUT COCK: A device used to cut-in or cut-out certain air brake functions. To open or cut-in the cock, move the handle at a right angle (crosswise) to the pipe. To close or cut-out the cock, move the handle in line with the pipe. Note that these positions are the opposite of angle cock positions.

DEAD ENGINE FEATURE: A manually positioned device for charging the main reservoir on a locomotive from the brake pipe when main reservoir pressure is not available.

DEADMAN FOOT VALVE: A device which will initiate a penalty brake application on a locomotive after a short time delay, if foot pedal is released on locomotive and brake cylinder pressure is not at least 25 psi.

DECELOSTAT: A wheel slide system that automatically releases brake cylinder pressure rapidly upon detection of wheel slide and restores brake cylinder pressure as soon as wheel begins to revolve. Wabtec versions currently in use are (3-AP, E-5 and E-7).

DEFECTS – RUNNING GEAR - Any condition not in compliance with CFR49 Part 238, which involves:

a. Suspension.
b. Draft System.
c. Trucks.
d. Wheels.

DEFECTS – NON RUNNING GEAR - Any condition not in compliance with CFR49 Part 238, which involves:

a. Exhaust gases released outside cab or other compartments.
b. Batteries properly vented.
c. Jumper cables – May not hang free, no exposed wire, no broken plugs or receptacles.
d. High voltage safety labels for exterior doors and cover plates marked
e. Buffer plates in place.
f. Diaphragms in place and aligned
g. Exposed moving parts and electrical equipment both equipped with guards.
h. Floors, etc. free from oil, water, waste, or any obstruction
i. Manual door releases are in place.
j. Emergency equipment… as applicable, in place.
k. Safety related signage in place and legible.
l. High voltage safety labels for interior doors and cover plates marked
m. Emergency brake valves stenciled.
n. Trap doors safely operate and securely latch.
o. Vestibule steps are illuminated.
p. End doors and side doors operate.
q. Seats or attachments not broken or loose.

DISC BRAKES: An arrangement of brake cylinders and levers, which force brake pads against a disc fastened to the wheel or axle.

DISTRIBUTING VALVE: A device which applies and releases brakes and automatically maintains pressure in brake cylinders after a brake application

DOUBLE CHECK VALVE: A valve with two seats arranged so that air flowing past either seat cannot flow out past the other seat but will flow through a third common delivery connection.

DRAFT FORCE: A term used to describe coupler forces in a state of tension.

DUAL PORTED CUTOUT COCK: A device on some 26 equipment that cuts in or out the IBV and on 30CDW equipment that cuts in or out both the independent and ABVs.

DUPLEX RELEASE VALVE: An appliance permitting manual depletion of auxiliary reservoir pressure alone, or auxiliary and emergency reservoir pressure together.

DYNAMIC BRAKING: A means of using traction motors to create a braking effect.

ELECTRO-PNEUMATIC BRAKE: A system consisting of an interface unit on a locomotive and magnet valves on each car, which vents or recharges the brake pipe on each car electrically, at the same time a pneumatic application or release is taking place.

EMERGENCY APPLICATION: A rate of brake pipe reduction fast enough to cause the control valves to move to emergency position.

EMERGENCY BRAKE VALVE: A valve for the purpose of initiating an emergency brake application on all locomotives and passenger carrying cars.

EQUALIZING RESERVOIR: Serves as reference volume for the brake pipe relay valve portion. The relay valve portion establishes a pressure in the brake pipe equal to the pressure in the equalizing reservoir.

FACE-TO-FACE RELIEF: The exchange of information between employees when taking charge of equipment. When any of the following occurs, it is considered FACE-TO-FACE RELIEF:

- When the inbound Engineer does not leave the equipment unattended and communicates with the outbound Engineer the condition of the brakes and the status (location) of the MAP 1173(s).
- When the inbound Conductor or Assistant Conductor does not leave the equipment unattended and communicates with the outbound Engineer the condition of the brakes and the status (location) of the MAP 1173(s).
- When a mechanical department employee who is a QMP or QP who participated in the required brake test does not leave the equipment unattended and communicates with the outbound Engineer the condition of the brakes and the status of the MAP 1173(s) (located on the locomotive, possession of conductor, etc.).

When FACE-TO-FACE RELIEF does not occur as described above, a Passenger-Class II brake test is required.

NOTE: See definition of UNATTENDED EQUIPMENT

FOUL: Any condition which restricts the intended movement of one or more brake system components because the component is snagged, entangled, or twisted.

FREIGHT EQUIPMENT: Railroad locomotives and cars not included in the definition of **Passenger Equipment**.

FULL SERVICE REDUCTION: The amount of brake pipe reduction necessary to obtain maximum brake cylinder pressure during service brake application.

GRADIENT, BRAKE PIPE: The difference in brake pipe pressure between front and rear of train.

HAND BRAKE: A brake apparatus used to manually apply the brakes on a car or locomotive, if so equipped.

HEAD END POWER (HEP): The system on a locomotive that supplies electrical power to a train for air conditioning, heat, light, etc.

HST DEPARTURE TEST: Passenger-Class I Brake Test and Locomotive Departure Test equivalent for Tier II equipment.

INDEPENDENT BRAKE VALVE (IBV): A device to operate air brakes on locomotive independently of train brakes.

INITIAL TERMINAL: Place where train is originally made up.

INTERCOM SYSTEM: A two way voice communication system

INTERCOOLER: Radiating piping which cools compressed air between stages of compression.

LOCOMOTIVE: On-track equipment, other than hi-rail, specialized maintenance, or other similar equipment, which may consist of one or more units operated from a single control stand with one or more propelling motors designed for moving other passenger equipment, with one or more propelling motors designed to transport freight or passenger traffic, or both, or without propelling motors but with one or more control stands.

MAGNET VALVE: A device for controlling the flow of air, which is dependent on a magnetic coil being energized or de-energized.

MAIN RESERVOIRS: One or more reservoirs on locomotives or cars for storing the main supply of compressed air.

MAP 1173: See definition of AIR BRAKE INSPECTION AND TEST CERTIFICATE

MINIMUM REDUCTION: Handle position on 26, 30 and E-type ABVs that produces a brake pipe reduction of 6-8 psi at a service rate.

MIXED CONSIST TRAIN: A train consisting of passenger carrying cars and two or more non-passenger carrying cars.

MU-2, MU-2A VALVE: A two or three-position valve, which cuts the IBV IN or OUT.

MU EQUIPMENT: Self propelled diesel or electric passenger equipment with one or more control stands and seating for carrying passengers. MU equipment may be operated as a single unit or coupled in multiples to provide added passenger capacity. MU equipment with a control stand is considered an MU locomotive.

M.U. HOSES: Air hoses that are only common to locomotives including: main reservoir equalizing, actuating (if equipped), and application and release.

NON-PASSENGER CARRYING CAR: A car designed to handle Mail, Baggage, and Express (MB&E) that is operated as part of a passenger train consist. e.g. Baggage car (BAG), Material Handling Car (MHC), Express (EXP), Auto Carriers.

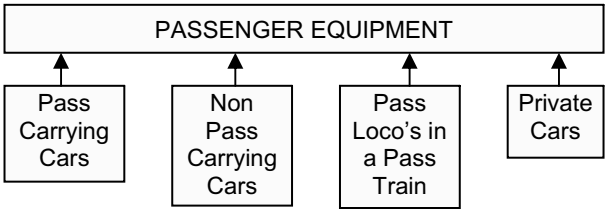
OFF AIR: Not connected to a continuous source of compressed air of at least 60 pounds per square inch.

ORIGINATING PASSENGER TERMINAL: The passenger terminal where a train first receives passengers, in the same city or terminal where it is initially made up. No train may depart from its originating passenger terminal with any safety critical devices inoperative. This would include air brake, alertor, train control system and controlling locomotive radio.

PARKING BRAKE: A spring applied and air released brake found on certain cab control cars and locomotives.

PASSENGER CARRYING CAR: A car designed to carry passengers and/or to provide on-board services; e.g., coaches, sleepers, food service, or cars designed with a combination of passenger facilities. This definition includes Cab Control Cars and MU Equipment. This term does NOT include a Private Car.

PASSENGER EQUIPMENT: All Passenger Carrying Cars, Non-Passenger Carrying Cars, Private Cars and Passenger Locomotives in a Passenger Train. This definition does NOT include a freight locomotive when used to haul a passenger train due to failure of a Passenger Locomotive.



PASSENGER TRAIN: A train consisting of any combination of Passenger Equipment. A passenger train may transport passengers only when required passenger train brake tests and mechanical inspections have been performed. AMT-3 instructions for Passenger Operations apply to passenger trains.

PA SYSTEM (PUBLIC ADRESS SYSTEM): A one way voice communication system.

PENALTY BRAKE APPLICATION: An automatic service application of air brakes caused by Overspeed Control, Train Control Systems or Alertor/Deadman.

PNEUMATIC CONTROL SWITCH (PCS): Indication on a locomotive control console that represents power loss/knockout. It displays whenever a penalty or emergency brake application occurs.

POWER CAR: Rail vehicle that propels a Tier II passenger train or is the lead vehicle in a Tier II passenger train or both. A POWER CAR is considered a locomotive.

PRESSURE MAINTAINING: A feature of certain types of ABVs which compensates brake pipe pressure against maximum permissible leakage during a service application.

PRESSURE RETAINING VALVE: A manually positioned valve found on freight, Non-Passenger Carrying Cars (MB&E), and Private Cars that will control release of brake cylinder pressure.

PRIVATE CAR: Rail rolling equipment that is used only for excursion, recreational or private transportation purposes. A Private Car is not a Passenger Carrying Car.

P-2-A APPLICATION VALVE: A valve which provides a full service penalty brake application when actuated by any one of the following features: Overspeed Control, Train Control Systems, or Alertor/Deadman.

QUALIFIED EMPLOYEE: An employee who is classified as a QP, QMP or QMI.

QUALIFIED MAINTENANCE PERSON (QMP): A person who has received instruction and training that includes "hands-on" experience in one or more of the following functions:

- Troubleshooting
- Inspection
- Testing
- Maintenance or repair of specific train brake and other components and systems for which the person is assigned responsibility.

The person's primary responsibility includes work in the functions listed above and is designated to:

- Conduct Class I brake tests
- Conduct exterior calendar day mechanical inspections
- Determine whether defective equipment may be moved

QMP qualifications are valid for three years. Employee's qualifications may be revoked if he/she demonstrates insufficient knowledge or skills to perform assigned duties. It is the employee's responsibility to attend required classes and maintain there qualifications.
Note: T & E employees are not considered QMP's

QUALIFIED MECHANICAL INSPECTOR (QMI): A 'Qualified Person' who has received instruction and training that includes "hands-on" experience in one or more of the following functions:

- Troubleshooting
- Inspection
- Testing
- Maintenance or repair of specific train brake components and systems for which the person is assigned responsibility.

Each QMI shall also possess a current understanding of what is required to properly repair and maintain the safety-critical brake components for which the person is assigned responsibility. The person's primary responsibility includes work generally consistent with the functions listed above

QMI qualifications are valid for three years. Employee's qualifications may be revoked if he/she demonstrates insufficient knowledge or skills to perform assigned duties. It is the employee's responsibility to attend required classes and maintain there qualifications.
Note: T & E employees are not considered QMI's

QUALIFIED PERSON (QP): Person who has received instruction and training to perform various functions as determined by the railroad. Qualified Supervisors and T & E crews are considered QP's. This individual may perform a/an:

- Interior Calendar Day Mechanical Inspection on Tier I Passenger Carrying Cars
- Class IA Brake Test for Passenger Trains
- Class II Brake Test for Passenger Trains
- Class I Brake Test for Non-Passenger Trains
- Class II Brake Test for Non-Passenger Trains
- Class III Brake Test for Non-Passenger Trains
- Transfer Train Brake Test for Non-Passenger Trains

QUICK SERVICE VALVE: A device connected to the brake pipe for the purpose of propagating quick service by making a brake pipe reduction on each car so equipped.
REDUCING VALVE: A valve designed to reduce and maintain air pressure to a predetermined amount.
REDUCTION RELAY VALVE: A device comprising a quick service valve and a vent or emergency valve mounted on a common pipe bracket. It is connected to the brake pipe to provide additional local venting of brake pipe air on each car so equipped, during both service and emergency brake applications. This device is auxiliary to the control valve and utilized on cars having a great amount of brake pipe volume.
REGULATING VALVE: A device which controls pressure and maintains it at a predetermined setting. The regulating valve is usually found within the automatic brake valve.
REPAIR POINT: Location designated by a railroad where inspections and/or repairs of the type necessary occur on a regular basis. A repair point has or should have the facilities, tools and personnel qualified to make the necessary repairs.
RESERVOIR RELEASE VALVE: An appliance permitting manual depletion of control reservoir pressure.
ROLL BY INSPECTION: An inspection performed while equipment is moving.
RUNNING BRAKE TEST: A test performed by a locomotive engineer while the train is in motion to verify that the brake system functions as intended.
SAFETY VALVE: A valve designed to open and close at predetermined pressures.
SERVICE APPLICATION: A brake application consisting of one or more brake pipe reductions at a service rate.
SERVICE RATE OF REDUCTION: A reduction of brake pipe pressure at a rate fast enough to cause control valves to move to the service position, but not fast enough to cause them to move to emergency.
SERVICE ZONE: That portion of the brake valve quadrant on 26, 30 and E-types ranging from minimum reduction position to full service position that produces a self-lapping brake pipe reduction at a service rate proportional to handle position.
SPEEDOMETER OVERSPEED: A device that initiates a penalty brake application when the speed indicated on the speed indicator exceeds maximum allowed.
SPLIT REDUCTION: An automatic brake application consisting of an initial reduction of 6-8 psi followed 20 to 30 seconds later with additional reductions to the desired amount.
SUMMARY MAP 1173: See **AIR BRAKE INSPECTION AND TEST CERTIFICATE**

SUPPRESSION POSITION: Handle position on 26, 30 and E-type ABVs used to forestall or recover from a penalty brake application.

SWITCHING (YARD) OPERATIONS: Assembling or changing the position of cars for train movements; for the purposes of loading, unloading or servicing; or placing of locomotives or cars for repair or storage. During switching operations, brake pipe must be charged, except when brake pipe is defective or damaged. SWITCHING is NOT considered a TRAIN MOVEMENT.
TERMINAL: Starting point or ending point of a single scheduled trip for a train, where passengers may get on or off a train. Normally, this location is a point where the train would reverse direction or change destinations.
TIER I TRAIN: Operating at speeds not exceeding 125 mph.
TIER II TRAIN: Operating at speeds exceeding 125 mph but not exceeding 150 mph.
TRAIN, COMMUTER: Passenger train providing commuter service within an urban, suburban or metropolitan area.
TRAIN CONTROL SYSTEMS:

- **AUTOMATIC TRAIN CONTROL (ATC)**: A train control system which consists of Cab Signals, Speed Control and ATS. Engineer is required to maintain speed associated with each cab signal aspect. Any overspeed condition will require suppression within 8 seconds.
  Cab Signal: A signal that is located in the engine control compartment which indicates track occupancy or condition. The cab signal is used in conjunction with interlocking signals and with or in lieu of block signals.
  Speed Control: A device on an engine which will cause a penalty application of the brakes if the engineer fails to reduce the train's speed to the speed required by the cab signal indication.

  ATS: See following description.
- **AUTOMATIC TRAIN STOP (ATS)**
  Continuous: A component of the Automatic Train Control (ATC) system. Any downward change in the cab signal aspect results in an audible alarm and requires acknowledgment within eight seconds to avoid a penalty brake application.
  Intermittent Inductive Train Stop (IITS): A system which enforces acknowledgment as a train passes over a wayside inductor. If the signal is clear no action is required. If the signal displays a more restrictive indication than clear, the audible alarm will sound and engineer is required to acknowledge within 8 seconds to avoid a penalty brake application.
  Inert Inductor Automatic Train Stop (IIATS): Wayside inductors not connected with a block signal system, positioned to provide advance warning to trains of certain permanent speed restrictions and designed to apply the brakes automatically until train stops.

- **ADVANCED CIVIL SPEED ENFORCEMENT SYSTEM (ACSES):** A transponder and data radio based train control system that supplements the ATC system by enforcing permanent speed restrictions, temporary speed restrictions, and a positive stop at interlocking and controlled point signals displaying Stop Signal.
  Interlocking Area: An interlocking or closely located group of interlockings served by a single Base Communication Package (BCP).
- **INCREMENTAL TRAIN CONTROL SYSTEM (ITCS):** A Differential Global Positioning Satellite (DGPS) and data radio based train control system that supplements the underlying method of operation and fixed signal system by enforcing permanent speed restrictions, temporary speed restrictions, entrance to out-of-service tracks, and speeds required by fixed signal indications.

TRAIN, LONG DISTANCE INTERCITY: Passenger train that provides service between large cities more than 125 miles apart and is not operated exclusively on Amtrak's NEC.

TRAIN MOVEMENT: Movement of equipment BETWEEN yards and/or terminals on tracks which require:

- authority to occupy, or
- movement over public road crossings.

Before making any TRAIN MOVEMENT, applicable train brake tests are required.
A "Train Movement" is NOT considered switching.

TRAIN, PASSENGER: See PASSENGER TRAIN

TRAIN, SHORT DISTANCE INTERCITY: Passenger train that provides service exclusively on Amtrak's NEC or between cities that are not more than 125 miles apart.

TRAIN CONTROL TIMING DEVICE: A device used to provide a six second warning whistle and delay time which, if not acknowledged within 8 seconds, will produce a penalty brake application.

TRANSFER TRAIN: A train that travels between a point of origin and a point of destination not exceeding 20 miles. Such trains may pick up or deliver freight equipment while en route to destination.

TWO-WAY END-OF-TRAIN DEVICE: A system consisting of a head end or locomotive control unit (LCU) and a rear end or end of train unit (EOT). This system monitors brake pipe pressure, motion, marker light status, and battery condition at the rear of the train and transmits this information to the locomotive cab for display. Activating an emergency toggle switch in the locomotive cab initiates an emergency brake application from the rear of the train.

UNATTENDED EQUIPMENT: Equipment left standing and unmanned in such a manner that would hinder immediate application of hand/parking brakes or air brakes by a qualified employee to prevent equipment from moving.

UNDESIRED EMERGENCY (UDE): Emergency brake application on a train for which no apparent cause can be determined.

WHEEL SLIDE CONTROL SYSTEM: A system that automatically releases or reduces brake cylinder pressure rapidly upon detection of an impending wheel slide. Brake cylinder pressure is restored as soon as the wheel begins to revolve or after a preset safety timeout.

YARD: System of tracks within defined limits provided for the making up of trains, storing of cars, or other purposes.

1.2 Standard Air Pressures

Air pressure regulating devices on locomotives and cars must be adjusted to the standard pressures indicated in this Instruction.

Equipment	Pounds Pressure (PSI) Brake Pipe	Misc.	Main Reservoir
1.2.1 LOCOMOTIVES			
Passenger Service Tier I	110		130 – 140
Passenger Service – VIA	100		130 - 140
Passenger Service – Tier II (HST)	110		140 – 150
Non-Passenger Service	90		130 - 140
NEC Welded Rail Train	110		130 - 140
When train brake pipe pressure has been increased to other than standard pressure, the increased pressure will be carried to final destination of the train.			
1.2.2 CAB CONTROL CARS			
	110		130 - 140
1.2.3 TALGO			
	110		130 - 140
1.2.4 TURBOLINERS			
	110		130 - 145
1.2.5 ELECTRIC MU CARS			
	110		130 - 140
1.2.6 INDEPENDENT BRAKE			
Brake Cylinder Pressure			
(1) AEM-7		75	
(2) HHP-8, P32BWH, P40, P42, F59PHI, P32ACDM, GP38, NPCU		72	
1.2.7 SAFETY VALVES			
Locomotive main reservoir Tier I		150	
Tier II (HST)		160	
Locomotive compressor			
1. Intercooler		60	
2. Discharge pipe		185	
(Where equipped)			
1.2.8 CONTROL AIR PRESSURE			
EMD Locomotives		90	
GE Locomotives		80	
1.2.9 CAR WATER RAISING SYSTEM			
	Superliner Horizon & Viewliner	Heritage	
Governor valve	80	60	
Reducing valve	45	25	
Safety valve	50	35	

1.2.10 TIMING RESERVOIR, SPEED CONTROL SYSTEM			
		45	

1.2.11 BRAKE PIPE EQUALIZATION PRESSURE FOR FREIGHT TYPE CONTROL VALVES			
Brake Pipe Pressure (PSI)	Brake Pipe Full Service Reduction (PSI)	Brake Pipe Equalization Pressure (PSI)	Emergency Equalization Pressure (PSI)
90	26	64	76
100	29	71	84
110	32	78	93

1.2.12 FREIGHT LOCOMOTIVES IN PASSENGER SERVICE

When a freight locomotive is the only source of compressed air and will be used to haul a passenger train, brake pipe pressure must be increased to not more than 15 psi below the minimum main reservoir pressure of that locomotive before coupling to the train. Brake pipe pressure must not exceed 110 psi:

-If minimum main reservoir pressure is 120 psi, brake pipe pressure must be increased to 105 psi.

-If minimum main reservoir pressure is 130 psi, brake pipe pressure must be increased to 110 psi.

When a power unit, crane, or other piece of machinery will be used to haul non passenger cars with freight type brake equipment, the maximum brake pipe pressure shall not be greater than15 psi less than the air compressor starting or loading pressure set on the power unit, crane, or other piece of machinery.

Union Pacific

When a Union Pacific locomotive is used to pull an Amtrak train, maximum brake pipe pressure will be 105psi. Train must be placed in emergency before adding UP unit ahead. After adding unit, brake system must then be recharged to 105psi ensuring that brakes are completely released. When brakes are released, a Passenger Class II / Non-Passenger Class III Brake Test must be performed.

2.0 LOCOMOTIVES

2.1 Employee Responsibility – Locomotive Inspection, Testing and Documentation

2.1.1 At the beginning of the tour of duty, engineer will check that a MAP 100 is located on each locomotive in consist.

NOTE: When MAP 100 or MAP 101 is referenced in the following instructions, METROLINK Locomotives and Cab Cars will use Calendar Day Inspection Forms SMP 100 and SMP101.

2.1.2 Locomotive Calendar Day Inspection Requirements

A. Each locomotive must receive a Locomotive Calendar Day Inspection each calendar day, regardless of whether delayed enroute.
NOTE: This instruction also applies to non-complying locomotives.

B. At the beginning of the tour of duty, engineer will check MAP 100 on each locomotive in consist to determine that Locomotive Calendar Day Inspection remains valid.

C. The date on which a locomotive(s) receives the last calendar day inspection and test will be determined by the MAP 100 information entered in the "Signature Of Supervisor approving unit for service and all work above", "Occupation", "Place", "Date", "Time" (blocks 35-39). The MAP 101 will have the same date, same location and approximate time as the above sections of the MAP 100. In the event the MAP 100 does not have the "Signature Of Supervisor approving unit for service and all work above", "Occupation", "Place", "Date", "Time" (blocks 35-39) section completed, the Engineer will use the most recent date on the MAP 101 to determine the date of the last calendar day inspection.

D. If a locomotive has NOT been inspected today and will be in service past 11:59PM tonight, a Locomotive Calendar Day Inspection is required before 11:59PM tonight.

E. When Locomotive Calendar Day Inspection has expired and Mechanical Department personnel are not available, engineer will perform inspection according to Instruction 2.2. before placing locomotive in service.

F. When Locomotive Calendar Day Inspection will be required before 11:59PM tonight and Mechanical Department personnel are not available, engineer will perform inspection as per Instruction 2.2 after:

1. contacting train dispatcher to arrange for location to perform inspection.
2. OR, when communication is not available with train dispatcher, perform inspection at any point prior to 11:59PM tonight.

G. When Locomotive Calendar Day Inspection is not current on locomotive(s) within a Mechanical Facility, the locomotive(s) may be moved to a repair or servicing track in order to perform the inspection within the same mechanical facility. Before movement is made:

1. Determine that locomotive is safe to move,
2. Comply with AMT-3 Section 2.16.1,
3. Perform locomotive air brake tests as prescribed by AMT-3 Sections 2.5 and 2.6, and,
4. Movement must not exceed 5 mph.

2.1.3 Mechanical Department Employees

A. Mechanical department personnel who are employed to perform locomotive calendar day inspections, air brake daily inspections, and the locomotive departure brake test must perform the above mentioned inspections / tests in accordance with all applicable Standard Maintenance Procedures and the current edition of the AMT-3 instruction manual.

B. Mechanical personnel must perform the air brake daily inspection as outlined in section 2.4 and the locomotive air brake departure test as outlined in section 2.3 prior to dispatching the locomotive for service.

C. Mechanical personnel shall submit a written report of the air brake daily inspection and air brake departure test. Use appropriate MAP form(s) or WMS template.

2.1.4 Each locomotive placed in service must receive all required inspections to ensure compliance with the requirements listed in 49 CFR Part 229.

A. Each locomotive in service must receive the following inspections:

1. Periodic (Once each 92 days).
2. Annual (Does not exceed 368 calendar days).
3. Biennial (Does not exceed 736 calendar days).

2.1.5 All inspections, other than the daily inspection will be noted on Form F6180.49A ("Blue Form") and must be checked for proper dates.

2.1.6 Trains/Locomotives must not enter any Train Control System Territory with defective or cut out Train Control System or "Acknowledger" unless relieved by Rule, Special Instruction, General Order, Bulletin Order or other directive.

2.1.7 The "Acknowledger" must be tested prior to entering any Train Control System territory. Perform test by briefly depressing the "Acknowledger" to verify sounding of the audible alarm.

2.1.8 Engineer must verify that train control system has been tested as prescribed in Instruction 7.1 prior to operation in any Train Control System Territory. Engineer will accept mechanical forces inspections and tests as documented by MAP 100 and MAP 101.

2.1.9 When train control system test(s) is required and Mechanical Department personnel are not available, engineer will perform test(s) according to Instruction 7.0.

2.1.10 When a locomotive consist changes by coupling or uncoupling units (including push-pull equipment), a locomotive air brake test is required. Perform the air brake test from the **controlling** locomotive (**controlling cab** on dual cab locomotives) as indicated by the table below.

Locomotive Air Brake Tests When Consist Changes By Coupling Or Uncoupling Units Enroute

Step	Determination	Yes	No
1	Did your current controlling locomotive or cab change?	Proceed to Step 2.	After locomotive(s) are set out or picked up, perform brake test as per instruction 2.5 from controlling locomotive or cab.
2	Does MAP101 on the new controlling locomotive indicate that Locomotive Calendar Day Inspection is current?	After locomotive(s) are set out or picked up, perform brake test as per instruction 2.5 from new controlling locomotive or cab.	After locomotive(s) are set out or picked up, perform Locomotive Calendar Day Inspection as per instruction 2.2 from new controlling locomotive or cab.

2.1.11 Any time a seal is broken the following information must be entered on MAP 100:

A. Device cut out.
B. Seal number if available.
C. Reason for cutting out.
D. Geographic location where cut out.
E. To whom report was made.

2.1.12 Engineers must keep a supply of MAP 100's available while on duty.

2.1.13 Engineers must, before going off duty, complete the bottom section of the current MAP 100 by indicating any defects, signature, location, date and time. If a non-complying condition exists, comply with Instruction 2.1.15.

2.1.14 Missing MAP 100 or MAP 101 Forms.

A. Missing MAP 100
   1. Locomotives must not depart an originating terminal without a current MAP 100 on each locomotive.
   2. At other than originating terminal, locomotive may proceed without a MAP 100, provided it will not be used as controlling locomotive in train control system territory.
   3. At other than originating terminal, if locomotive will be used as controlling locomotive in train control system territory, comply with one of the following:
      a. Obtain a copy of the current MAP 100 that indicates train control system test(s) was performed, OR
      b. Perform required Train Control System test(s) and complete a new MAP 100 as per Instruction 7.0, OR
      c. Verify that the proper train control system test(s) was performed by contacting the mechanical desk at CNOC either directly at 1-800-424-0217 or through the train dispatcher. Record on the "Failures Enroute" section of the current MAP 100 or a new MAP 100 the type of test, name of employee who performed test and place, date and time of test.

   NOTE: Every effort must be made to use the option which causes the least train delay.

B. Missing MAP 101
   1. Locomotives must not depart an originating terminal without a current MAP 101 on each locomotive.
   2. At other than originating terminal, before proceeding, complying with one of the following:
      a. Obtain a copy of the current MAP 101,
      b. Use Date indicated in Box 7 of MAP 100 as last Locomotive Calendar Day Inspection date. Note missing MAP 101 on "Failures Enroute" section of MAP 100, OR

c. Verify place, date and time of last Locomotive Calendar Day Inspection by contacting the mechanical desk at CNOC either directly at 1-800-424-0217 or through the train dispatcher. Enter the place, date and time of the last inspection on the "Failures Enroute" section of the current MAP100, OR

d. Perform the Locomotive Calendar Day Inspection as per Instruction 2.2.

NOTE: Every effort must be made to use the option which causes the least train delay.

C. Locomotive Engineers must immediately report missing MAP 100 or MAP 101 by contacting the mechanical desk at CNOC either directly at 1-800-424-0217 or through the train dispatcher.

2.1.15 Any locomotive with a non-complying condition must be documented as follows:

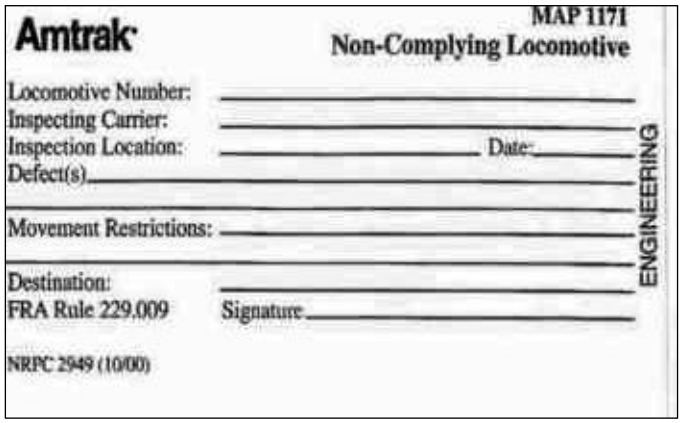
A. Attach a completed Non-Complying tag to control stand, isolation switch or engine control panel.

B. Describe defect on MAP100. If non-complying tag is not available, write "Non-Complying Locomotive" on "Failures Enroute" section of MAP 100 in addition to describing defect and any restrictions.

C. In multiple unit consists or push/pull operations, note on MAP 100 of lead unit that non-complying locomotive is in consist or train.

D. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: Non-Complying Locomotive tag SMP130 must be used when a non-complying condition exists on METROLINK locomotives.


Amtrak

MAP 1171

Non-Complying Locomotive

Locomotive Number: _____

Inspecting Carrier: _____

Inspection Location: _____ Date: _____

Defect(s) _____

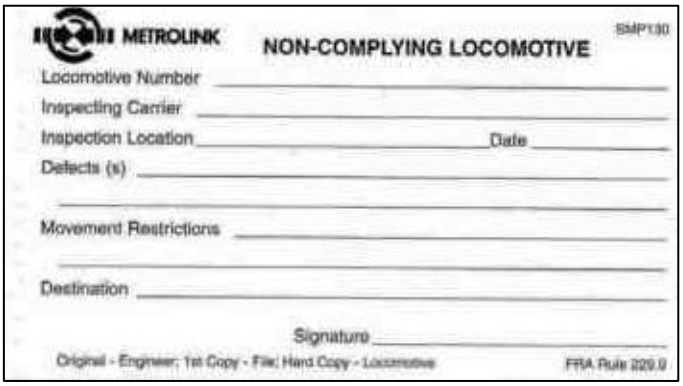
Movement Restrictions: _____

Destination: _____

FRA Rule 229.009 Signature _____

NRPC 2949 (10/00)

ENGINEERING


METROLINK

NON-COMPLYING LOCOMOTIVE

SMP130

Locomotive Number _____

Inspecting Carrier _____

Inspection Location _____ Date _____

Defects (s) _____

Movement Restrictions _____

Destination _____

Signature _____

Original - Engineer; 1st Copy - File; Hard Copy - Locomotive

FRA Rule 229.9

2.1.16 Non-complying locomotives may be moved to the next Amtrak locomotive repair facility, if safe to do so, only as:

A. lite locomotives, or

B. in a train either dead or with propelling motors cut out/isolated.

EXCEPTION: A locomotive that develops a non-complying condition enroute may continue to utilize its propelling motors, provided Instruction 2.7 is complied with.

2.2 Locomotive Calendar Day Inspection Procedure When Performed By Engineer

NOTE: If a defect (non-complying condition) is discovered at a location where locomotive cannot be repaired or replaced on a revenue passenger train, comply with Instruction 2.7.

NOTE: Any non-complying condition discovered during this inspection must be documented according to Instruction 2.1.15.

NOTE: As indicated by instruction 2.2.40, the Locomotive Departure Test (Instruction 2.3) is part of the Locomotive Calendar Day Inspection and MUST be performed in addition to Instruction 2.2.

NOTE: No train may depart from its originating passenger terminal with any safety critical devices inoperative. This would include air brake, alertor, train control system and controlling locomotive radio.

NOTE: When CNOC mechanical desk is referenced in the following instructions, METROLINK T&E employees will contact Metrolink MOC at 909-593-0661.

2.2.1 Locomotive must be secured.

2.2.2 Hand brakes/parking brakes are in a safe and suitable condition for service. If found defective:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15.
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.3 Verify that Locomotive Inspection and Repair Report, F6180.49A (Blue Form), is displayed on locomotive.

2.2.4 Cut outs or enclosures for safety devices listed on MAP 100 are properly positioned and sealed:

A. Train Control Cut-out Cock/Switch
B. Alertor Cut-out Cock/Switch
C. ACSES Cut-out Cock/Switch
D. Speedometer (Locomotive) Overspeed Cut-out Cock/Switch
E. Speed Control Cut Out Switch
F. ATC Switch
G. Event Recorder
H. Car Door Override Switch

2.2.5 Cab seats properly secured to the floor or sides. If found defective:

A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.6 Cab windows and wipers provide clear vision and windows are free of broken areas. If found defective:

A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Repair or switch locomotive to trailing position,
D. Note defect on MAP100, and
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.7 Cab heaters function as intended. If found defective:

A. If cannot be repaired and weather conditions create an unsafe environment switch to trailing position and continue in use until next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.8 Cab lights and gauge lights are operative and provide sufficient illumination. If found defective:

A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.9 Speed indicator and related apparatus is undamaged. The performance and accuracy of the speed indicator can only be ascertained after departure (10 mph to 30 mph +-3 mph; above 30 mph +-5 mph). If found defective:

A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.10 Air brake gauges register variations in pressure in relation to brake valve handle position. If found defective:

A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,

B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.11 Air compressor or compressors control main reservoir pressure, as indicated by cab gauges, within range specified for type locomotive. If found defective:
A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.12 Headlights operate properly, and can be dimmed as required. One defective bulb of a two-bulb 200 watt headlight IS NOT considered non-compliant. One defective bulb of a two bulb 350 watt headlight IS non-compliant. If found non-compliant (defective):
A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

NOTE: AEM-7AC, HHP-8 and HST Power Car are the only Amtrak locomotives equipped with 350 Watt headlight bulbs. All other Amtrak locomotives are equipped with 200 Watt headlight bulbs.

2.2.13 All auxiliary (ditch) lights operate as intended. If found defective:
A. If 1 defective auxiliary light is discovered at initial/originating terminal of train, repair or switch locomotive to trailing position,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.14 Locomotive radio operates as intended. If found defective:
A. Repair, substitute another radio or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.15 Dynamic brake equipment is in place and cut in if locomotive is equipped. Locomotives with defective dynamic brake will proceed as follows:
A. Place tag on control stand or Engine Control panel indicating “Inoperative Dynamic Brakes”, locomotive number, date, location and signature of person who discovered (see page 114).
B. Note defect on MAP100.
C. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that locomotive with inoperative dynamic brake is in consist or train.
D. Conventional locomotives must be repaired within 3 calendar days.
E. MU locomotives must be repaired by the next Locomotive Calendar Day Inspection.

2.2.16 Horn and bell operate as intended. If either found defective:
A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.17 Sanitation, Toilet Compartment and Toilet:
A. No significant amount of filth, trash, or human waste in toilet compartment.
B. No strong, persistent, chemical or human waste odor from toilet compartment
C. Adequate ventilation in toilet compartment.
D. Toilet not defective and flush mechanism functions as intended.
E. Toilet compartment door closes.
F. Toilet compartment door lock functions as intended.
G. Sufficient quantity of toilet paper and trash bags.
H. Sufficient quantity of antibacterial agents such as antibacterial soap and water or antibacterial towelettes and sufficient quantity of paper towels for employee sanitation needs.
I. If toilet or toilet compartment is unsanitary, complete non-complying tag as per Instruction 2.1.15 and comply with the following:
1. Use locomotive as trailing unit in consist, or
2. Locomotive can be used as a lead unit only until unsanitary condition can be corrected, replaced with another locomotive, or the

next Locomotive Calendar Day Inspection, provided all of the following are met:
   a. No other locomotive is available (cannot switch to trail),
   b. Toilet could not have been made sanitary since last Locomotive Calendar Day Inspection,
   c. Toilet compartment door is closed and adequately ventilated so locomotive cab is habitable, and
   d. Engineer is provided other toilet facilities upon reasonable request.
3. Note on MAP100 date toilet or toilet compartment becomes unsanitary.

J. If toilet is defective but sanitary, complete non-complying tag as per Instruction 2.1.15 and comply with the following:
1. When not in switching service, use locomotive as trailing unit in consist, or
2. When not in switching service, locomotive can be used as a lead unit only until defective condition can be corrected, replaced with another locomotive, or the next Locomotive Calendar Day Inspection, provided all of the following are met:
   a. No other locomotive is available (cannot switch to trail),
   b. Toilet could not have been repaired since last Locomotive Calendar Day Inspection, and
   c. Engineer is provided other toilet facility upon reasonable request.
3. Locomotive can be used as a lead unit in switching service for 10 days after toilet becomes defective.
4. Note on MAP100 date toilet becomes defective.

K. Inadequate ventilation of toilet compartment or defective toilet compartment door
1. If toilet compartment inadequately ventilated locomotive must be repaired, be used as a trailing unit or in switching service.
2. If toilet compartment door is defective or will not close locomotive must be repaired, used as a trailing unit or in switching service.

L. If toilet compartment door lock is defective, lock must be repaired on or before the next 92-day inspection. Note on MAP100 date toilet compartment becomes defective.

M. If locomotive has insufficient quantity of toilet paper, trash bags or sanitary washing needs, obtain prior to use of locomotive.

2.2.18 Sanders function on each locomotive to deliver sand to each rail in front of the first power operated wheel set in the direction of movement. If found defective:
A. Repair if possible. If not, locomotive MUST be set up to prohibit propulsion (isolated), switch to trailing position and continue in use to next Amtrak locomotive repair facility.
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.19 No traction motor is cut out. If traction motor is cut out:
A. Locomotive MUST be set up to prohibit propulsion (isolated), switch to trailing position and continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

NOTE: This instruction does not apply to AEM-7 AC, HHP-8, HST and P32ACDM locomotives. However, when traction motor is cut out on this equipment note must be made on MAP 100.

2.2.20 Emergency brake valve (conductor valve) properly labeled and accessible. If defective:
A. Repair or use as trailing locomotive to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.21 Doors and cover plates that are marked “Danger” and covering high voltage electrical apparatus must be secured in their proper locations. If found defective:
A. Repair if possible. If not, shut down locomotive, switch to trailing position and continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.22 Fan openings, exposed gears and pinions, and exposed moving parts protected to prevent injury. If found defective:

A. Repair if possible. If not, shut down locomotive, switch to trailing position and continue to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.23 No bent/broken grab irons or accumulations of oil, water, fuel, debris and other items in passageways, walkways, cab control compartment floors and engine compartment floors which presents an unsafe condition such as a slipping hazard. If found defective:
A. Repair if possible. If not, shut down locomotive, switch to trailing position and continue to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.24 No battery gas leaks in cab or engine compartment. If found defective:
A. Repair if possible. If not, shut down locomotive, switch to trailing position and continue to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.25 No obvious diesel engine exhaust gas leaks into the engine compartment. If found defective:
A. Repair if possible. If not, shut down locomotive, switch to trailing position and continue to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.26 Water and oil drained from main reservoirs if not equipped with automatic drain valves.

2.2.27 Brake rigging properly secured. If found defective:
A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.28 No part of trucks, brake rigging and running gear, with the exception of the wheels and non-metallic sand hoses, are less than 2-1/2 inches above top of rail. Determination can be made by inspecting under side of the locomotive from outside the gage of the rail. If found defective:
A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.29 Pilots, snowplows, end plates properly secured and not less than 3 inches nor more than 6 inches above top of rail. If found defective:
A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.2.30 Draft gear and uncoupling mechanisms secure and not bent, cracked, broken or missing parts. If found defective:

NOTE: This instruction does not apply to the High Speed Trainset (HST).

A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,

D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.31 Jumper cables are properly stored (ends of cables should not be hanging free) and do not create a tripping hazard.

2.2.32 Brake shoes are properly applied and aligned with tread of wheels or other braking surfaces. If found defective:

A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.33 Visible traction motor, HEP cables and cable connections are free from damage. If found defective:

A. Repair if possible. If not, locomotive MUST be set up to prohibit propulsion (isolated), switched to trailing position and continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.34 Trucks, shocks, spring rigging and associated parts in proper position and free of cracks and breaks. If found defective:

A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.35 Any wheel does not have a single flat or shelled spot 2 ½ inches or more in length. Any wheel does not have adjoining flat or shelled spots 2 inches or more in length. Any wheel does not have defects such as broken, gouged, chipped or cracked rim or flange. When more restrictive railroad rules or instructions are in effect concerning wheel defects, those instructions will apply. If found defective:

A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.36 Emergency fuel cut-off devices and pantograph down devices are properly marked and free of any impediment which could prevent their operation. If found defective:

A. Repair if possible. If not, shut down locomotive, switch to trailing position and continue to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100, and
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.2.37 Fuel tank (transformer on electric locomotives) is not leaking. If found defective:

A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.2.38 Brake cylinder travel must provide proper clearance when the brakes are released. Piston travel, if applicable, may not exceed 1 ½ inches less than

total piston travel as indicated on form FRA-F6180-49A. If found defective:

A. Determine any operating restrictions (rules or equipment) which apply,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Set out locomotive immediately or move to the next point where it can be set out,
D. Note defect on MAP100 of locomotive which was set out, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.2.39 Pantograph/carbon strip on electric locomotives and 3rd rail shoe on dual mode locomotives not broken or damaged. If found defective:

A. Locomotive may be moved to next Amtrak locomotive repair facility,
B. Change to undamaged pantograph on electric locomotives, and
C. Note defect on MAP100.

2.2.40 Perform a Locomotive Departure Test, as per Instruction 2.3, from the controlling locomotive.

2.2.41 Complete MAP101 on each locomotive and complete a new MAP 100 to be left on each locomotive, as follows:

A. MAP100 (See sample MAP100 in back of AMT-3)
   1. Complete the first line, indicating train number, locomotive number and position in consist (Boxes 1-3).
   2. Enter your signature, occupation, place, date, time of the inspection in the boxes on the line with the heading "Signature of Employee making daily mechanical inspections" (Boxes 4-8).
   3. On the MAP 100 of the CONTROLLING locomotive, check the applicable space for "F End" or "R End" under heading "Locomotive Calendar Day Air Brake Test" (Box 29). Check only the "F End" on single cab locomotives.

      NOTE: Only complete Box 29 on the MAP 100 of the controlling locomotive.
   4. On the MAP 100 of the CONTROLLING locomotive, enter your signature, occupation, place, date, time of the brake test in the boxes on the line with the heading "Signature of Employee making air test" (Boxes 30-34).

      NOTE: Only complete Boxes 30-34 on the MAP 100 of the controlling locomotive.
   5. Complete the "Condition of Equipment" section (Boxes 40-54) by indicating "OK" beside each item which is applicable. Indicate "N/A" beside each item which is not applicable. If not "OK", describe condition. Use "Failures Enroute" section for additional space.
   6. Enter a description of any defective or non-complying condition in the "Failures Enroute" section.

B. MAP 101
   1. Enter date, time and location of the inspection on next available line of MAP 101.

C. Contact CNOC mechanical desk at 1-800-424-0217 before going off duty to report that inspection has been performed and whether any defects were noted.

2.3 Locomotive Departure Test

2.3.1 Preparation

A. Apply Blue Signal protection when required.
B. Secure equipment according to Instruction 3.5.
C. All M.U., main reservoir and brake pipe hoses properly coupled between locomotive(s) and/or car(s) or on end of locomotives placed in proper receptacles or dummy couplings.

   NOTE: When an AEM-7 class locomotive leads any diesel locomotive, the application and release hoses must NOT be coupled between the electric locomotive and the diesel.
D. All angle cocks, cut out cocks and end cocks properly positioned, including truck cut out cocks.
E. Charge system to required pressure.

NOTE: PCS light must illuminate in instructions 2.3.4A, 2.3.5G, 2.3.6C, 2.3.7C and 2.3.8A.

2.3.2 Independent Brake Test

A. Release independent brake.
B. Full application in 10 psi increments.
C. Full release in 10 psi increments.
D. Note that full independent brake cylinder pressure is correct and holds in 10 psi increments.

2.3.3 Brake Pipe Leakage Test

A. Make a 20 psi brake pipe reduction.
   1. Cut out pressure maintaining: move brake pipe cut off pilot valve/switch to "TEST" or "OUT" position.

NOTE: Brake pipe leakage must not exceed 3 psi /minute.

B. Move ABV handle to "RELEASE" position.

NOTE: Brake pipe pressure must not increase for one minute.

C. Cut in pressure maintaining: move brake pipe cut off pilot valve/switch to “PASS, “FRT“, or “IN“ position.

2.3.4 Emergency Brake Test

NOTE: On locomotives equipped with dynamic brake interlock (DBI), proceed to instruction 2.3.5. If locomotive is NOT equipped with DBI, proceed with the following:

A. Make emergency brake application with ABV.
B. Emergency brake cylinder pressure is obtained within 4 seconds and determine that brakes have applied.
C. Recover from emergency.
D. Determine that brakes have released.

2.3.5 Dynamic Brake Interlock (DBI) Test

A. Insure system is fully charged.
B. Make a full service brake application.
C. Place reverser handle in forward or reverse.

NOTE: On GE units, generator field switch must be ON.

D. Move dynamic brake handle to “SET UP“, wait 10 seconds.
E. Move dynamic brake handle to “No. 2” position.
F. Insure brake cylinder pressure drops to zero psi.
G. Move ABV handle to emergency position.

NOTE: Ensure brake cylinder pressure is restored in 4 seconds.

H. Move dynamic brake handle to “OFF“ position.
I. Move reverser handle to “NEUTRAL“ position.
J. Recover from emergency application.

NOTE: On GE units, turn generator field switch to “OFF”.

2.3.6 Deadman/Alertor Test

A. Release brake cylinder pressure.
B. If equipped with an Alertor:
   1. Allow Alertor to begin cycling.
   2. Acknowledge by pressing the “Acknowledge Button/Switch”.
   3. Allow Alertor to cycle again.
C. If equipped with a Deadman:
   1. Release Deadman foot pedal.
D. Allow penalty application to occur.

NOTE: Full service application should occur.

E. Move ABV handle to “SUPPRESSION“ or “LAP” position.
F. Recover from penalty application.

2.3.7 Train Control (If equipped and is destined for Train Control System territory)

A. Move ABV handle to “SUPPRESSION“ or “LAP” position.
B. Depress train control acknowledger and do not release.

NOTE: Penalty should be suppressed.

C. Continue to acknowledge and move ABV handle to release.

NOTE: Penalty brake application should occur.

D. Release acknowledger and move ABV handle to “SUPPRESSION“.
E. Recover from penalty and recharge system.

2.3.8 Emergency Brake Valve Test

A. Open emergency brake valve.

NOTE: Brakes should apply at an emergency rate.

B. Activate independent quick release feature and note that brake cylinder pressure drops to zero.
C. Release independent quick release feature.

NOTE: Emergency brake cylinder pressure must be restored.

D. Recover from emergency brake application.
E. Ensure all Emergency Brake valves operate as intended.

2.3.9 Graduated Release

A. Charge brake system to required pressure.
B. Make a full service brake application.
C. Move ABV handle to release in 6 psi increments.

   NOTE: Brake pipe and Equalizing reservoir should increase and hold at each increment. Brake cylinder pressure must decrease and hold at each increment. At least three brake cylinder pressure decreases must be observed.

2.3.10 Direct Release

A. Charge brake system to required pressure.
B. Make a 20 psi brake pipe reduction.
C. Move ABV handle towards “RELEASE“ position and stop movement within the “service zone“.
D. Check for one minute and ensure equalizing pressure does not change.
E. Move ABV handle to “RELEASE“ position and note that equalizing reservoir and brake pipe pressures recharge.

2.3.11 Determine That Brakes Apply/Release:

A. Place automatic brake valve in “Full Service” Position. Independent brake must be in release position. Brake must apply. It must be observed that all brake shoes/disc pads are firmly seated against the wheels or discs.
B. Piston travel must be within prescribed limits.
C. Place automatic brake valve in “Release Position”. Brake must release and sufficient shoe/pad clearance must be achieved
D. Fully apply independent brake. Brake must apply. It must be observed that all brake shoes/disc pads are firmly seated against the wheels or discs.

2.3.12 If any of the test procedures in 2.3.1 thru 2.3.11 fail, retest the procedure which failed.

2.3.13 If any of the test procedures in 2.3.1 thru 2.3.11 fail after retesting, locomotive must not be used until repaired, except as noted in 2.3.14 and 2.3.15. **NOTE: Any non-complying condition discovered during this test must be documented according to Instruction 2.1.15.**

2.3.14 If the procedures in 2.3.6 fail after retesting, the following will govern:

A. If the Deadman/Alertor test fails procedure as per Instruction 2.3.6 at an Amtrak locomotive repair facility, locomotive must be repaired before being used.

B. If the Deadman/Alertor test fails procedure as per Instruction 2.3.6 at other than an Amtrak locomotive repair facility:

1. Unit must not be used as controlling locomotive,
2. Place tag on control stand or engine control panel indicating "Defective Alertor",
3. Note defect on MAP 100, and
4. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that locomotive with defective alertor is in consist or train.

2.3.15 If the procedures in 2.3.7 fail after retesting, the following will govern:

A. If the Train Control test fails as per Instruction 2.3.7 at an Amtrak locomotive repair facility, locomotive must be repaired before being used in Train Control System territory.

B. If the Train Control test fails as per Instruction 2.3.7 at other than an Amtrak locomotive repair facility and unit is destined for Train Control System territory:

1. Unit must not be used as controlling locomotive,
2. Note defect on MAP 100, and
3. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that locomotive with defective Train Control System acknowledger is in consist or train.

2.4 Mechanical Department Locomotive Air Brake Daily Inspection.

2.4.1 General Information

A. Air brake and signal equipment on locomotives and cab cars must be inspected, maintained, and tested in accordance with current federal regulations, and Amtrak maintenance procedures.

B. Locomotives and cab cars must be inspected at least once each calendar day that the unit is in service.

C. Locomotives / cab cars must not depart a location where a unit received a daily inspection (Section 2.4) and/or air brake departure test (Section 2.3) without a current, signed MAP 100 and MAP 101 form.

2.4.2 Preparation

A. During the inspection, if a defect is found and this defect cannot be corrected in a timely manner by the employee performing the inspection, it must be reported immediately to your supervisor.

B. Apply Blue Signal Protection.

C. Secure locomotive with chocks. Chock both sides of one wheel and additional wheels as necessary to prevent movement.

D. Apply handbrake.

E. Fully apply independent brake or make full service application.

2.4.3 Air Compressors

A. Check compressor oil level. Ensure oil is up to full mark or with in operating range.

B. Compressor must not produce undue vibration or pounding, or otherwise make unusual noises that could indicate compressor damage or malfunction.

C. Compressor must operate to control main reservoir pressure 5 pounds above or below standard operating pressure.

D. Main reservoir pressure must increase 10 psi during the compressor loading cycle.

E. Compressor governor shall be adjusted so that the compressor will start when the main reservoir pressure is not less than 15 psi above the maximum brake pipe pressure fixed by the carrier.

F. Water and oil must be drained from the compressor inter-cooler and after-cooler, if possible.

G. Each air compressor on passenger equipment so equipped must be in effective and operative condition. MU passenger equipment found with an inoperative or ineffective air compressor at the time of its exterior calendar day inspection must be removed from service unless the railway company has in place procedures designed to protect the integrity of the air brake system as outlined in CFR Title 49, Part 238.303.e (17).

2.4.4 Water and oil must be drained from all main reservoirs.

2.4.5 Automatic main reservoir drain valves and air dryers are functioning properly.

2.4.6 Condensation is blown from end brake pipe, main reservoir, and MU hoses before coupling to another hose or attaching to dummy couplings. *No chemicals, which are known to degrade or harm brake system components, shall be placed in the train air brake system.*

2.4.7 All MU, main reservoir, and brake pipe hoses must be properly coupled between locomotives, stored in proper receptacles, or attached to their proper dummy couplings.

2.4.8 When an AEM-7 locomotive leads any diesel locomotive, the application and release hoses must not be coupled between these units.

2.4.9 All angle cocks, end cocks and cut-out-cocks must be properly positioned for service.

2.4.10 Air regulating devices must function properly and be adjusted to the prescribed pressures.

2.4.11 Air pressure gauges must not be in error more than 3 psi or 5% whichever is less.

2.4.12 Equalizing reservoir pressure must be within 3 psi of brake pipe pressure.

2.4.13 Cut outs for various safety devices and/or enclosures to such devices must be properly positioned and sealed, with numbers recorded on MAP 100 form.

2.4.14 Brake shoes and pads are properly applied, and aligned with tread of wheel or brake disc.

2.4.15 Ensure brake shoes have adequate service material.

2.4.16 Piston travel is properly adjusted.

A. Piston travel must provide proper brake shoe clearance when the brakes are released.

B. Piston may not exceed limits posted in Section MS.1.0. If locomotive is not listed travel may not exceed 1.5 inches less than the total possible piston travel. Total possible travel is recorded on MAP 816 in cab of locomotive.

2.4.17 Brake equipment and safety supports, where used, are in a safe and suitable condition for service, with no part of foundation rigging or safety supports less than 2-1/2" above the rail.

2.4.18 Brake rigging:

A. Ensure that brake levers, rods, beams, hangers, and pins do not bind or foul.

B. All pins are properly applied and secured.

C. Brake levers, rods, or pins may not be cracked or broken.

D. Brake levers, rods, or pins may not be worn more than 30%.

2.4.19 Brake disc must be inspected according to current Mechanical Department instructions.

2.4.20 Hand Brakes / Parking Brakes are in a safe and suitable condition for service.

A. At each daily inspection the handbrake / parking brake assembly and all of its associated parts shall be inspected and tested (applied and released) to determine that it functions as intended.

B. Locomotives operating in non-passenger service must have handbrake / parking brake stenciled with date of last annual inspection (232.105c). Locomotives subject to this regulation shall also have the handbrake / parking brake assembly inspected, tested and stenciled every 368 days.

C. Except for MU locomotives, locomotives operating in passenger service must have the handbrake / parking brake assembly (including all of its parts and connections) inspected and tested as often as the service requires but not less frequently than every 368 days. The date of the last inspection shall be entered on Form FRA F 6180-49A (MAP 816), suitably stenciled or tagged on the equipment or maintained electronically provided the FRA has access to the record upon request. *Amtrak locomotives shall have the handbrake inspection dates entered and tracked in the corporation's Work Management System (WMS).*

2.4.21 Communicating signal system on passenger locomotives must be tested and known to be in a safe suitable condition for service before each trip.

2.4.22 Ensure the words "Emergency Brake Valve" are legibly stenciled or marked near each brake pipe vent valve or adjacent badge plate.

2.4.23 FRA / Amtrak leakage limits.

A. Main Reservoir: Average of 3 pounds per minute over a period of 3 minutes.

B. Brake Pipe: 3 pounds per minute.

C. Brake Cylinder: Brakes must remain applied for 5 minutes with a full service brake application in effect, and communication to the brake cylinders closed.

D. Control Air System: Average of 3 pounds per minute over a period of 3 minutes.

2.4.24 Main Reservoir Safety Valve: Must not allow pressure to rise more than 15 psi above maximum standard main reservoir pressure.

2.5 Locomotive Air Brake Test

2.5.1 Refer to Instruction 2.1.10 to determine when this test is required.

2.5.2 Secure locomotive consist and other equipment as per Instruction 3.5.

2.5.3 If equipped with an independent brake:

A. Fully apply independent brake.
B. Observe that brakes apply on each locomotive unit in consist.
C. Fully release independent brake.
D. Observe that brakes release on each locomotive unit in consist.

2.5.4 Make a 10 psi automatic brake reduction.

2.5.5 Observe that brakes apply on each locomotive unit in consist.

2.5.6 If equipped with an independent brake:

A. Activate the independent quick release feature (bail off).
B. Observe that brakes release on each locomotive unit in consist.

2.5.7 Make an additional 10 psi automatic brake reduction (total 20 psi reduction)

2.5.8 Observe that brakes apply on each locomotive unit in consist.

2.5.9 Release automatic brake valve.

2.5.10 Observe that brakes release on each locomotive unit in consist.

2.5.11 Fully apply independent brake.

2.5.12 Perform required train brake test(s).

2.6 Locomotive Running Brake Test

2.6.1 Required on locomotives operated lite, or multiple lite upon:

A. Initial movement.
B. Change in consist of lite locomotives.
C. Changing control stations.
D. Frequently, with sufficient force, when snow or ice conditions exist.
E. Any point where a brake pipe angle cock or end cock has been turned.

2.6.2 To determine effectiveness of brakes while locomotive is moving, as soon as speed permits but not exceeding 20 mph:

A. Apply independent brake sufficiently to develop noticeable brake cylinder pressure and retarding force.
B. Release independent brake and make service application with automatic brake. Check brake cylinder pressure and retarding force.
C. Actuate independent brake handle.
D. Check that brake cylinder pressure releases and locomotive rolls free.

2.7 Locomotive Defects Discovered En-Route At Other Than Calendar Day Inspection Point

NOTE: Any non-complying condition discovered En-Route must be documented according to Instruction 2.1.15.

NOTE: No train may depart from its originating passenger terminal with any safety critical devices inoperative. This would include air brake, alertor, train control system and controlling locomotive radio.

2.7.1 Hand brakes/parking brakes are in a safe and suitable condition for service. If found defective:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.2 Cab seats properly secured to the floor or sides. If found defective en route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit. At next Calendar Day Inspection location, repair or switch to trailing position,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.3 Cab windows and wipers provide clear vision and windows are free of broken areas. If found defective en route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit. At next Calendar Day Inspection location, repair or switch to trailing position,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.4 Cab heaters function as intended. If found defective:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Switch locomotive to trailing position if unsafe to continue as lead unit. At next Calendar Day Inspection location, repair or switch to trailing position,
D. Note defect on MAP100, and
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.

2.7.5 Cab lights and gauge lights are operative and provide sufficient illumination. If found defective en route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. At next Calendar Day Inspection location, repair or switch to trailing position,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.6 Speed indicator and related apparatus is undamaged. The performance and accuracy of the speed indicator can only be ascertained after departure (10 mph to 30 mph +-3 mph; above 30 mph +-5 mph). If found defective or out of limits as indicated above:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. At next Calendar Day Inspection location, repair or switch to trailing position,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.7 Deadman/Alertor functions as intended. An alertor will be considered as having failed only when it will not acknowledge by pressing the “Alertor Acknowledge Button/Switch”.

Exception: When ATC is cut out on High Speed Trainset or HHP-8 Locomotive the alertor cannot be acknowledged using the alertor switch or foot pedal. In this case the alertor will **not** be considered as having failed.

NOTE: Alertor cycle times vary by equipment. Alertors which seem to cycle with short or long times must be reported on the MAP 100.

If deadman/alertor fails en route, comply with the following:

A. In a “single engineer” operation:
   1. an employee qualified on the signal system and trained to apply the emergency brake MUST be IMMEDIATELY positioned in the operating control compartment with the Engineer.

2. When qualified employee, as described above, is not available to position in operating control compartment, the Engineer shall be in constant communication with a second crew member as follows:
    a. Engineer will communicate with a designated train crew member, either verbally or by radio, the name of all block/interlocking signals, the approach to the limits of authority (DTC blocks, Track Warrants, Form D, etc.) and temporary speed restrictions.
    b. A designated train crew member will be alert for and acknowledge these communications. If the Engineer does not remain in communication as described above, the designated train crew member must determine the cause and if necessary, take action to stop the train.

    NOTE: The Conductor will designate the train crew member who will be positioned in the operating control compartment with the Engineer.

B. Alertor may be cut out electronically or pneumatically,
C. Locomotive may continue in use to next Amtrak locomotive repair facility,
D. Place tag on control stand or engine control panel indicating “Defective Alertor”
E. Note defect on MAP100,
F. At next Calendar Day Inspection location, repair or switch to trailing position,
G. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
H. Notify CNOC mechanical desk at 1-800-424-0217 and train dispatcher as soon as possible without delaying train.

2.7.8 Air brake gauges register variations in pressure when brake valves are manipulated. If found defective, locomotive may continue in use to next Amtrak locomotive repair facility and comply with the following:
A. Complete non-complying tag as per Instruction 2.1.15
B. Note defect on MAP100.
C. At next Calendar Day Inspection location, repair or switch to trailing position.
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train.
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.9 Air compressor or compressors control main reservoir pressure, as indicated by cab gauges, within range specified for type locomotive. If found defective en route:
A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. At next Calendar Day Inspection location, repair or switch to trailing position,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.10 Headlights operate properly, and can be dimmed as required. One defective bulb of a two-bulb 200 watt headlight IS NOT considered non-compliant. One defective bulb of a two bulb 350 watt headlight IS non-compliant. If found non-compliant (defective):
A. Locomotive may continue in use until next calendar day inspection,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. At next Calendar Day Inspection location repair or switch to trailing position,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: AEM-7AC, HHP-8 and HST Power Car are the only Amtrak locomotives equipped with 350 Watt headlight bulbs. All other Amtrak locomotives are equipped with 200 Watt headlight bulbs.

2.7.11 All auxiliary (ditch) lights operate as intended. If found defective en route:
A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. If 1 defective auxiliary light is discovered at initial/originating terminal of train, repair or switch locomotive to trailing position and repair no later than next Locomotive Calendar Day Inspection,
C. If 1 auxiliary light is defective, proceed and repair no later than next Locomotive Calendar Day Inspection,
D. If 2 auxiliary lights are defective:

1. Proceed, not exceeding 20 mph over public road crossings, to the next point where repairs can be made or the next Locomotive Calendar Day Inspection, whichever occurs first, or
2. Switch locomotive to the trailing position,

E. Complete non-complying tag as per Instruction 2.1.15,
F. Note defect on MAP100,
G. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
H. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.12 Locomotive radio operates as intended. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Repair, or replace with another operative radio if available,
D. At next Calendar Day Inspection location, repair, replace radio or switch to trailing position,
E. Note defect on MAP100,
F. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
G. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.13 Dynamic brake equipment is in place and cut in if locomotive is equipped. Locomotives with defective dynamic brake will proceed as follows:

A. Place tag on control stand or Engine Control panel indicating “Inoperative Dynamic Brakes”, locomotive number, date, location and signature of person who discovered (see page 114).
B. Note defect on MAP100,
C. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that locomotive with inoperative dynamic brake is in consist or train, and
D. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.
E. Conventional locomotives must be repaired within 3 calendar days.
F. MU locomotives must be repaired by the next Locomotive Calendar Day Inspection.

2.7.14 Horn and bell operate as intended. If either found defective en route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. At next Calendar Day Inspection location, repair or switch to trailing position,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.15 Sanitation, Toilet Compartment and Toilet:

A. If toilet or toilet compartment is unsanitary or defective, complete non-complying tag as per Instruction 2.1.15,
B. Locomotive can be used as a lead unit only until unsanitary condition can be corrected, replaced with another locomotive, or the next Locomotive Calendar Day Inspection, and
C. Note on MAP100 date toilet or toilet compartment becomes unsanitary or defective.
D. If toilet compartment door lock is defective, lock must be repaired on or before the next 92-day inspection. Note on MAP100 date toilet compartment becomes defective.

2.7.16 Sanders function on each locomotive to deliver sand to each rail in front of the first power operated wheel set in the direction of movement. If found defective en route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.17 No traction motor is cut out. If traction motor is cut out:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: This instruction does not apply to AEM-7 AC, HHP-8, HST and P32ACDM locomotives. However, when traction motor is cut out on this equipment note must be made on MAP 100.

2.7.18 Emergency brake valve (conductor valve) properly labeled and accessible. If defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.19 Doors and cover plates that are marked “Danger” and covering high voltage electrical apparatus must be secured in their proper locations. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.20 Fan openings, exposed gears and pinions, and exposed moving parts protected to prevent injury. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.21 No accumulations of oil, water, fuel, debris and other items in passageways, walkways, cab control compartment floors and engine compartment floors which presents an unsafe condition such as a slipping hazard. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.22 No battery gas leaks in cab or engine compartment. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.23 No obvious diesel engine exhaust gas leaks into the engine compartment. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Verbally notify all crew members of defect. Switch locomotive to trailing position if unsafe to continue as lead unit,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.24 Brake rigging properly secured. If found defective en-route:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,

C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.7.25 No part of trucks, brake rigging and running gear, with the exception of the wheels and non-metallic sand hoses, are less than 2-1/2 inches above top of rail. Determination can be made by inspecting under side of the locomotive from outside the gage of the rail. If found defective en-route:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.7.26 Pilots, snowplows, end plates properly secured and not less than 3 inches nor more than 6 inches above top of rail. If found defective en-route:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.27 Draft gear and uncoupling mechanisms secure and not bent, cracked, broken or missing parts. If found defective en-route:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.7.28 Brake shoes are properly applied and aligned with tread of wheels or other braking surfaces. If found defective en-route:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.7.29 Visible traction motor, HEP cables and cable connections are free from damage. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. If unsafe to continue under power, locomotive MUST be set up to prohibit propulsion (isolated),
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.30 Trucks, shocks, spring rigging and associated parts in proper position and free of cracks and breaks. If found defective:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,

C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.7.31 Any wheel does not have a single flat or shelled spot 2 ½ inches or more in length. Any wheel does not have adjoining flat or shelled spots 2 inches or more in length. Any wheel does not have defects such as broken, gouged, chipped or cracked rim or flange. When more restrictive railroad rules or instructions are in effect concerning wheel defects, those instructions will apply. If found defective:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.7.32 Emergency fuel cut-off devices and pantograph down devices are properly marked and free of any impediment which could prevent their operation. If found defective en-route:

A. Locomotive may continue in use to next Amtrak locomotive repair facility,
B. Complete non-complying tag as per Instruction 2.1.15,
C. Note defect on MAP100,
D. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
E. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.33 Fuel tank is not leaking. If found defective en-route:

A. If leak is severe, stop train and notify train dispatcher and CNOC mechanical desk at 1-800-424-0217 as soon as possible,
B. Determine actions to be taken from train dispatcher and/or CNOC mechanical desk, setting out locomotive if necessary,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

2.7.34 Brake cylinder travel must provide proper clearance when the brakes are released. Piston travel, if applicable, may not exceed 1 ½ inches less than total piston travel as indicated on form FRA-F6180-49A. If found defective en-route:

A. Set out locomotive if unsafe to continue,
B. Determine any operating restrictions (rules or equipment) which apply,
C. Complete non-complying tag as per Instruction 2.1.15,
D. Note defect on MAP100,
E. In multiple unit consists or push/pull operations, note on MAP100 of lead unit that non-complying locomotive is in consist or train, and
F. Notify CNOC mechanical desk at 1-800-424-0217 as soon as possible without delaying train.

NOTE: When locomotive is in passenger service, a QMP must be contacted before equipment is moved. Communicate to QMP any host railroad rules or instructions concerning the defect.

2.8 Independent Brake Operation

2.8.1 Independent brake must NOT be used in conjunction with blended brake operation.

2.8.2 Quick Release Feature

A. Hold handle in quick release (actuating) position until brake cylinder pressure is zero psi.

B. After brake cylinder pressure reaches zero psi, allow three seconds for each additional unit in consist.

C. Tampering with any device or appliance, introducing any object or means to create or maintain any locomotive in a condition to constantly bail off brake cylinder pressure is prohibited.

2.9 Double Heading And Helper Locomotives

2.9.1 When more than one locomotive is attached to a train, Engineer on leading locomotive in direction of movement will operate train air brakes.

2.9.2 All brake valve cutout cocks and handles shall be positioned as specified in Instruction 2.14 and Table A (Air Brake Handle Positions & Cutouts).

2.9.3 When necessary for leading locomotive to give up control of air brakes, perform a brake test as per Instruction P4.2.3 or NP4.2.3 from new controlling locomotive.

2.9.4 In case of emergency, brakes can be applied by moving the ABV handle or emergency brake valve on any unit in the consist to emergency position.

2.9.5 Before detaching power, train must be brought to a complete stop.

CSX Transportation

CSX Rule 103-H

2.8.6 Shoving Passenger Trains – **DO NOT** assist a passenger train carrying passengers by pushing from the rear of the train.

2.10 Dead Locomotive(s) In A Train

2.10.1 If main reservoir supply is available, make up hoses and set up brake valves per Instruction 2.14 and Table A (Air Brake Handle Positions & Cutouts); OR

2.10.2 If **NO** main reservoir supply is available, drain main reservoir pressure to 0 psi and cut out automatic drain valves (stem is recessed in knob);cut in dead engine feature and set up brake valves per Instruction 2.14 and Table A (Air Brake Handle Positions & Cutouts); AND

2.10.3 Automatic and independent brake handles must be removed or secured in proper position as per Instruction 2.14 and Table A (Air Brake Handle Positions & Cutouts).

2.11 Charging A Train

2.11.1 Before air hoses are coupled, condensation must be blown from brake pipe and main reservoir supply hoses of locomotive.

2.11.2 No chemicals, which are known to degrade or harm brake system components, shall be placed in the train air brake system.

2.11.3 While charging train, independent brake must remain fully applied.

2.11.4 Charge train using “RELEASE” position of automatic brake valve. Pressure maintaining feature must be cut in.

2.12 Use Of Sand

2.12.1 When necessary to use sand, number 1 truck or lead axle sand switch, if equipped, should be used to prevent slipping of locomotive wheels.

2.12.2 Slipping of locomotive wheels causes severe stress to draft systems and damage to rails and should be avoided.

2.12.3 Do not apply sand while wheels are slipping. Throttle must be reduced to stop wheel slip, and then start sanding and advance throttle slowly.

2.12.4 Where conditions require, sand should be used as the train is stopping to avoid slipping when starting.

2.12.5 Unnecessary Actuation of Locomotive Sanders in Stations

A. Unless equipment designs or specific instructions require otherwise, do not place equipment in emergency and thereby cause sanders to discharge unnecessarily.

B. In the event that locomotive sanders are activated by emergency brake applications, every effort must be taken to reset the emergency as quickly as equipment will permit, **without releasing the train brakes**.

2.13 Recovery From Penalty Application

2.13.1 When a penalty application occurs, acknowledge and place ABV handle in “LAP” or “SUPPRESSION” position.

2.13.2 Ensure throttle/controller is in “IDLE” or “OFF” position.

2.13.3 Penalty application may be recovered while moving provided there is sufficient time to recharge train before next brake application is required.

2.14 Locomotive Air Brake And Equipment Set Up

2.14.1 Handles of brake valves, brake valve cutout cocks and other brake devices must be in position as indicated by Table A (Air Brake Handle Positions & Cutouts).

2.14.2 Single locomotives, multiple units (including push/pull) or dual cab locomotives must have one control stand set up as a lead unit unless being hauled dead in train.

2.14.3 Ensure all air and electrical connections are properly configured.

A. For movements Over-The-Road, connect M.U., Main Reservoir and Brake Pipe hoses as per Table B and open associated angle cocks and cut-out cocks. Install MU cable (black), communication cable (blue) and any other require electrical connections such as HEP or EP.

B. Movements may be made within the confines of a yard or terminal without connecting the M.U. hoses, as long as the Brake Pipe and Main Reservoir hoses are connected with associated angle and main reservoir cocks open.

C. When uncoupling locomotives, ensure that all air cut-out cocks and angle cocks are closed.

2.14.4 On P-42DC and P-32ACDM locomotives, the Brake Pipe Cut-Off (Pilot) Valve/Switch must be in the "TRL" position when NOT set up as the controlling brake valve or when Table A requires the use of "OUT" position. The "TEST" position will only be used during required standing brake tests or to comply with the procedure in 2.14.6.

2.14.5 P-42DC and P-32ACDM locomotives are not equipped with MU2, MU2A or Dual Ported Cut-out Cocks.

2.14.6 Complete the following procedure to prevent trapped air in the independent brake system when setting up the air brakes on a P-42DC or a P-32ACDM to be used:

- In Push Service
- In Double Heading (Helper) Service, or
- In a train consist, with M.U. hoses NOT connected to the unit controlling the air brakes.

A. Ensure that equipment is secure

B. Make a Full Service application with the Automatic Brake handle.

C. Wait for air exhaust to stop.

D. Place the Independent Brake handle in the RELEASE position **(DO NOT BAIL OFF BRAKE CYCLINDER PRESSURE)**

E. Move the brake pipe cut-off pilot switch to the TEST position for 10 seconds.

F. Move the brake pipe cut-off pilot switch to TRL position.

G. Move the Automatic Brake handle to the HANDLE OFF position

H. Ascertain, that brake cylinder pressure fully releases on the Push, Double Heading or In-Train locomotive when train brakes are released. If brake cylinder pressure does not fully release, perform the following from the Push, Double Heading or In-Train locomotive brake valve:

1. Move brake pipe cut-off pilot switch to TEST position
2. Bail off brake cylinder pressure.
3. Return brake pipe cut-off pilot switch to TRL position.

I. If a P-32ACDM or P-42DC locomotive is Double Headed (Helper) Service or in a train consist with no MU Cables connected, an employee must immediately take position in the operating control compartment to observe for a locked axle indication.

2.15 Sealing Of Protective Devices On Locomotives

2.15.1 Mechanical forces will apply seals on the following and record their numbers on the MAP 100:

A. Train Control Cut-out Cock/Switch.

B. Alertor Cut-out Cock/Switch.

C. ACSES Cut out Cock/Switch.

D. Speedometer (Locomotive) Overspeed Cut-out Cock/Switch.

E. Speed Control Cutout Switch.

F. ATC Switch.

G. Event Recorder.

H. Car Door Override Switch.

2.15.2 If seal numbers are not recorded on the MAP 100, train is not to be delayed. Engineer must note on MAP 100 that no numbers were recorded when taking charge of locomotive.

2.15.3 Any time a seal is broken the following information must be entered on MAP 100:

A. Device cut out.

B. Seal number.

C. Reason for cutting out.

D. Geographic location where cut out.

E. To whom report was made.

2.16 Lite & Multiple Lite Locomotive Movements

2.16.1 Before initial movement of any lite or multiple lite locomotive consist, engineers (QP may assist engineer) and mechanical department employees must determine that:

A. All locomotive brakes are cut in by visually observing brake cylinders applied, brake shoes against wheels, brake indicators applied or any other device for the purpose of determining that truck brakes are cut in and applied.

B. Locomotive is secured and that brakes respond as intended to application and release of automatic and independent brake valves.
C. Before movement, hand/parking brakes are released and all chocks, skates or chains are removed.

2.16.2 Lite and Multiple Lite Movements Over-The-Road

A. All brake hoses between multiple lite locomotives must be properly connected with associated air cut out cocks OPEN.
B. When main reservoir supply is not available, the locomotive(s) without main reservoir connections MU'ed MUST:
   1. Be the rear-most unit(s) of the multiple lite consist.
   2. Have all brake pipe hoses connected and cut in.
   3. Have all main reservoirs drained to 0 psi then close main reservoir drains and cut out automatic drain valves (stem recessed in knob).
   4. Have dead engine feature cut in (OPENED).
C. Automatic and IBV handles and cut out cocks must be positioned as prescribed in instruction 2.14 and Table A (Air Brake Handle Positions & Cutouts).
D. Reverser handles on all non-operating control stations must be removed. Those that cannot be removed must be properly secured.
E. 27 point control cables must be inserted and secured in their proper receptacles between live compatible units coupled in multiple.
F. When Mechanical Department employees are responsible for make up, inspection and testing of lite and multiple lite locomotive consist, the make-up, inspection and testing will be performed in accordance with Standard Maintenance procedures and AMT-3.
G. Locomotive Engineers must inspect all lite and multiple lite locomotives as per Instruction 2.2
H. Lite and multiple lite locomotive consist must be tested as per Instruction 2.3 from controlling locomotive, prior to departure.

   NOTE: QP, QMP or QMI assistance will be required during the locomotive departure test.
   1. During departure test, brakes on all MU'ed locomotives in multiple lite consist must apply and release in response to independent and automatic brake movements.
   2. During departure test, brakes on locomotives with only brake pipe connected in multiple lite consist must apply and release in response to automatic brake movements.
   3. Main Reservoir gauge on rear unit of multiple lite consist must be observed to determine that air pressure is being restored prior to being dispatched.
I. MAP 100 forms, must be placed, along with prescribed inspection records, in the cab of each unit in the consist.
J. An Air Brake Inspection and Test Certificate (MAP1173) must be filled out upon completion of the multiple lite locomotive departure test and placed in the locomotive cab from which the consist will be operated. *Locomotive Departure Brake Test must be printed at the top of this form.*
K. Lite and multiple lite locomotives must not depart without completed MAP100, MAP101 and MAP1173.
L. Without Face-to-Face relief, perform a Non-Passenger Class III brake test on lite and multiple lite locomotive movements, prior to departure.
M. Lite and multiple lite locomotive movements require a locomotive Running Brake Test as per Instruction 2.6

2.16.3 Lite And Multiple Lite Movements Within Yards or Terminals

A. Lite and multiple lite locomotives may be moved within the confines of a yard or terminal without connecting the M.U. hoses, as long as the brake pipe and main reservoir hoses are connected with associated angle and main reservoir cocks open.

2.17 Failure of Locomotive Air Brakes

2.17.1 All locomotives must leave terminal points with air brakes in operative condition.

2.17.2 In the event that locomotive brakes become inoperative while locomotive is moving lite, the following procedure applies:

A. Locomotives with dynamic braking should be stopped by use of dynamic brake and hand/parking brake.
B. Locomotives without dynamic braking, rail cars and other equipment must be stopped with hand/parking brake, if practicable.
C. It not practicable to stop with hand/parking brake, locomotives may be stopped by "plugging the motors".

   CAUTION: THIS MUST ONLY BE USED AS A LAST RESORT. THE RETARDING FORCE WILL BE SEVERE WHEN POWER IS APPLIED IN REVERSE ON A MOVING LOCOMOTIVE. CREWS MUST ANTICIPATE THIS FORCE AND PROTECT THEMSELVES FROM INJURY.

D. To “plug the motors“: place throttle lever in idle position; place reverse lever in position opposite direction of movement; move throttle lever to first notch; locomotive must be secured with hand/parking brakes immediately after movement is stopped, chocking the wheels as necessary.

NOTE: PLUGGING MOTORS ON CERTAIN AMTRAK LOCOMOTIVES MAY NOT BE EFFECTIVE DUE TO PROTECTION BY ELECTRICAL INTERLOCKS.

2.18 Emergency Application - Locomotive

2.18.1 ABV initiated

A. Full emergency brake effort must be allowed to apply.

B. Leave handle in emergency until stopped.

C. Move throttle to idle.

D. **NOTE:** It is acceptable to regulate locomotive brake cylinder pressure from an undesired emergency (UDE) brake application.

2.18.2 When equipped with Two-Way End-Of-Train device, engineer or other train crewmembers must activate the two-way end-of-train device using the “emergency” toggle switch when any emergency application occurs.

2.18.3 Recovery from emergency after stopping

A. Move ABV to release.

B. Inspect ENTIRE train for derailed cars, shifted loads, etc.

C. Make a Class II brake test as per Instruction P4.2.3 for Passenger Operations.

D. Make a Class III brake test as per Instruction NP4.2.3 for Non-Passenger Operations.

2.18.4 After proceeding, a running test of brakes must be made.

3.0 TRAIN MAKE UP

3.1 General

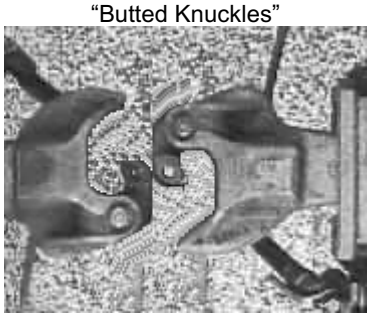
3.1.1 A safety stop must be made just (approximately 50 feet) prior to coupling to any equipment. A safety stop is not required when distance between **standing** equipment to be coupled is less than 50 feet.

NOTE: This instruction applies to “Butted Knuckles” or contacting equipment as if coupling.

3.1.2 When coupling equipment, care must be taken to prevent injury or damage. Coupling must be made at the minimum speed required to complete the coupling but not exceeding 4 mph.

NOTE: This instruction applies to “Butted Knuckles” or contacting equipment as if coupling.

“Butted Knuckles”



3.1.3 After coupling locomotive(s) to train, couplers between locomotive and train must be **DOUBLE** stretched to insure that proper coupling is made. This applies to all subsequent couplings between cars and/or locomotives. Telltale hole or recess **MUST** be fully visible.

3.1.4 Before air hoses are coupled, condensation must be blown from brake pipe and main reservoir supply hoses of locomotive.

3.1.5 Connect all brake pipe and main reservoir air hoses.

3.1.6 Cut in main reservoir supply by opening cutout cocks slowly.

3.1.7 Cut in brake pipe by opening angle cocks slowly, beginning with cock closest to locomotive.

3.1.8 Connect required H.E.P. cables, M.U. and communication jumpers.

3.1.9 Release all hand / parking brakes unless required.

3.1.10 Cars equipped with pressure retaining valves must be set in “DIRECT EXHAUST” position or as specified in Timetable Special Instructions.

3.1.11 Passenger Equipment in a freight train must have the DIR/GRA cap on the control valve set in “DIRECT RELEASE”.

3.1.12 All locomotive control valve service portions are to be set in “GRADUATED RELEASE”.

3.1.13 Train blocking for mixed consist trains with Mail, Baggage & Express (MB&E) cars:

A. Baggage Cars (1000, 1100, 1200, 1700, or 1800 series) and Material Handling Cars (1400 or 1500 series), may be blocked anywhere in the train consist.

B. Express cars (70000, 71000 or 74000 series) must be blocked on the rear of the train consist. EXCEPTION: Private Cars may be blocked behind Express cars.

C. Private Cars may be blocked anywhere in train consist. Private Cars ARE NOT classified as Passenger Carrying Cars (See Definition “Passenger Carrying Car”). Private Cars are classified as Passenger Equipment (See Definition “Passenger Equipment).

NATIONAL RAILROAD
PASSENGER CORPORATION

PASSENGER OPERATIONS Section

The instructions in this section apply to all TRAIN MOVEMENTS, EXCEPT the following:

- Freight trains, including work trains, wreck trains and wire trains
- Equipment not in a passenger train which is being moved to or from a repair shop.

NOTE: When a train consists of ONLY Non-Passenger Carrying cars, either Passenger Operations OR Non-Passenger Operations Instructions MAY be applied. However, Passenger Operations Instructions must be complied with before Non-Passenger Carrying cars are used in Passenger Service.

P1.0 GENERAL

See 1.0 All Operations Section for instructions.

P2.0 LOCOMOTIVES

See 2.0 All Operations Section for instructions.

P3.0 TRAIN MAKE UP

See 3.0 All Operations Section for instructions.

P4.0 BRAKE TESTS / EQUIPMENT INSPECTIONS

P4.1 General

P4.1.1 Responsibility

A. Only a Qualified Maintenance Person (QMP) may perform:
   1. a Class I brake test or HST Departure Test. A locomotive engineer may participate in Class I brake test by manipulating the automatic brake valve (ABV), checking leakage and testing alertor.
   2. an Exterior Calendar Day Mechanical Inspection.
   3. Interior Calendar Day Mechanical Inspection on High Speed Trainsets.

B. Either a Qualified Maintenance Person (QMP) or a Qualified Person (QP) may perform:
   1. A Class IA brake test.
   2. A Class II brake test.
   3. An Interior Calendar Day Mechanical Inspection on other than High Speed Trainsets.

C. Supervisors are jointly responsible with Inspectors, Engineers, Conductors and Assistant Conductors for:
   1. Performing Class IA brake tests and detecting defects determined by these tests,
   2. Performing Class II brake tests and detecting defects determined by these tests, and
   3. Performing Interior Calendar Day mechanical inspections on other than High Speed Trainsets and detecting defects determined by these inspections.

D. A Running brake test may only be performed by a Locomotive Engineer.

   NOTE: Conductor MUST have knowledge that Running Brake test has been performed.

P4.1.2 Signal For Brake Application

A. During standing tests, brake must not be applied or released until proper signal is given or a clear understanding is obtained.

P4.1.3 Condition Of Brakes

A. Passenger trains must have 100% operative brakes on all cars and locomotives at any point where a Class I, HST Departure or Class IA brake test is performed.

B. Passenger trains must not depart a terminal or yard, which is a repair point, where a Class II brake test has been performed with brakes cutout, inoperative or defective.

C. Passenger trains MUST HAVE at least 85% operative brakes, unless the provisions of P6.2.3C are complied with.

D. Passenger trains in passenger service must not leave a designated Amtrak repair point with less than 100% operative brakes.

NOTE: No train may depart from its originating passenger terminal with any safety critical devices inoperative. This would include air brake, alertor, train control system and controlling locomotive radio.

P4.1.4 MAP 1173\10C Summary Documentation for Brake Tests and Mechanical Inspections.

NOTE: IF THE 10C PORTION OF THE MAP 1173 IS MISSING OR INCORRECT, **TRAIN IS NOT TO BE DELAYED**. Note missing 10C Summary or incorrect information on Condition EnRoute section of Summary MAP 1173.

NOTE: When MAP 1173/10C Summary is referenced in these instructions, **METROLINK** T&E employees will use **METROLINK** Form SMP 1173.

A. MAP 1173/10C Summary (Air Brake Inspection & Test Certificate) Requirements
   1. Completion of the Class I brake test and HST Departure test must be documented by completion of the MAP 1173 by a QMP who participated in the test for all passenger trains.
   2. Completion of the Exterior/Interior inspections by QMP must be documented by completion of the 10C summary section of the MAP 1173/10C for all passenger trains.
   3. QMP must enter total number of cars in “Number of Cars” box and other required information on MAP 1173.
   4. Passenger trains must not leave any point where a Class I brake test or HST Departure test was performed without MAP 1173/10C for equipment tested at that point except as prescribed in P4.1.4D.1

5. Commuter / Short-Distance Intercity Passenger Trains - MAP 1173, once completed, is valid until the next scheduled Class I Brake Test, which is required once each calendar day.
6. Long-Distance Intercity Passenger Trains – MAP 1173/10C, once completed, is valid until the next scheduled Class I Brake Test, which is required every 1500 miles or once each calendar day whichever occurs first.
7. High Speed Trainsets - MAP 1173, once completed, is valid until the next scheduled HST Departure Test, which is required every 1500 miles or once each calendar day whichever occurs first.
8. The MAP 1173 remains valid if any one, or more than one, of the following train consist changes occur:
    a. Adding or removing a block of cars from the train.
    b. Changing motive power, changing controlling cabs with M.U.'ed locomotives, changing cabs on locomotives with double end control, changing ends on push-pull trains or running around train with locomotive(s).
9. If the controlling locomotive changes and MAP 1173 otherwise remains valid, a QMP or QP will draw a line through (Line Out) the previous controlling locomotive number and write in the new controlling locomotive number.
10. Summary MAP 1173
    a. The Summary MAP 1173 is the one issued when a Class I brake test is performed at the originating point or a scheduled Class I brake test location for the train.
    b. Additional MAP 1173 forms may be issued at other locations when cars are added between the originating point and scheduled Class I brake test locations.
    c. When additional MAP 1173 forms are issued, the Locomotive Engineer must write the word "Summary" at the top of the MAP 1173 which was issued at the originating point or a scheduled Class I brake test location for the train.

        NOTE: When MAP 1173's are issued for both ends of commuter/turnaround service, the requirement to write "Summary" at the top does not apply.
    d. The Summary MAP 1173 will be used by Locomotive Engineers to summarize the train consist/brake information as required by instruction P4.1.5.
    e. Only one MAP 1173 will be considered the Summary MAP 1173 even though multiple MAP 1173 forms were issued.
    f. All MAP 1173 forms must remain with the Summary MAP 1173.
    g. When another Class I brake test is performed at a scheduled Class I brake test location, QMP will issue a new MAP 1173 which will become the new Summary MAP 1173.

B. 10C Summary Portion.
    1. The 10C Summary portion of the MAP1173/10C Summary form will list all cars in the train consist that received a Class I brake test and calendar day interior/exterior inspection without any operational restrictions.
    2. Cars with defective side doors, end doors and/or PA/Intercom will be listed by car number.
    3. Locomotives with a defective dynamic brake and/or air compressor will be listed by Locomotive number.
    4. Train and Engine crews are not responsible for information on 10C Summary and must not delay departure of a train with missing or conflicting information on 10C summary.

C. Location of MAP 1173 forms.
    1. All MAP 1173 forms must remain in cab of controlling locomotive (also refers to cab cars in this Instruction).
    2. When Conductor is in possession of MAP 1173's, the forms must be placed in cab of the controlling locomotive at earliest point, without delaying train.
    3. When controlling locomotive changes, MAP 1173 forms must be moved to cab of controlling locomotive. In commuter/turnaround service, when MAP 1173 is placed on both ends of equipment, forms need not be moved to controlling end.

4. When inbound engineer is unable to move MAP 1173 forms to cab of controlling locomotive due to crew and locomotive change, forms will be moved to required location by terminal services, car inspector foreman or designated representative.

D. Missing MAP 1173 Forms.
   1. Passenger trains must not leave any point where a Class I brake test or HST Departure test was performed without MAP 1173 for equipment tested at that point except as follows:
      a. Movement may be made between maintenance facility where the train was assembled and the originating passenger terminal of the train after performing a Passenger Class IA brake test. Passenger train must not depart originating terminal without required inspections, brake test and MAP 1173.

      NOTE: No train may depart from its originating passenger terminal with any safety critical devices inoperative. This would include air brake, alertor, train control system and controlling locomotive radio.

      b. When adding cars En Route as per Instruction P6.2.1E, and MAP 1173 is not available.
   2. If Summary MAP 1173 is lost or missing after leaving a point where a Class I brake test or HST Departure test was performed, another available MAP 1173 may be used as the Summary MAP 1173.
   3. With Face-To-Face relief, if MAP 1173's are not available, report missing forms to CNOC mechanical desk either directly at 1-800-424-0217 or through the train dispatcher at earliest point, without delaying train.
   4. Without Face-To-Face relief, if Summary MAP 1173 is not available, verify condition of brakes (whether any brakes are cut out):
      a. By contacting CNOC mechanical desk either directly at 1-800-424-0217 or through the train dispatcher, or
      b. When CNOC cannot be contacted, by performing a walking inspection of a brake application.

P4.1.5 Change Of Crew - Determining Condition of Brakes

A. Prior to change of engine crews, inbound engineer will complete the appropriate section of Summary MAP 1173, adjusting for any equipment added (multiple MAP 1173's may exist) or removed as follows:
   1. Locomotive/Cab Car numbers.
   2. Date.
   3. Time.
   4. Number of Cars –Total number of cars in the train.
   5. Condition of Brakes:
      a. Acceptable – at least 85% operative brakes.
      b. Unacceptable - less than 85% operative brakes – trains in passenger service proceed as per Instruction P6.2.3C.
   6. Communication Signal – An operative 2-way radio is considered as an operative communication signal:
      a. Operative
      b. Inoperative
   7. Engineer's Signature.

B. Whenever a Class IA Brake Test is performed, the following information must be noted on "Condition En Route" section of the Summary MAP 1173: Class IA Brake Test Performed, Date, Time, Location and Initials of QP or QMP.

C. Prior to change of engine crew, inbound engineer will indicate on "Condition En Route" section of Summary MAP 1173 the car numbers and number of axles cut out of any equipment with brakes cut out.

D. After change of engine crew, outbound engineer will review "Condition En Route" section of ALL MAP 1173 forms to determine whether any brakes are cut out. If it is determined that any brakes have been cut out, notify the train dispatcher and CNOC mechanical desk as soon as possible without delaying train, communicating car number/s and number of axles cut out. CNOC may be contacted either directly at 1-800-424-0217 or through the train dispatcher.

E. With face to face relief, outbound engineer will ascertain condition of brakes and perform a Running Brake Test.

F. Without face to face relief, outbound engineer will determine condition of brakes by reviewing Summary MAP 1173, perform a Class II Brake Test and perform a Running Brake Test.

Union Pacific

G. On relay trains, Engineer must pass along air brake slip to outbound Engineer.

H. After change of engine crew, outbound engineer will review "Conditions En Route" section of ALL MAP 1173/10C Summary forms to determine if brake pipe cut-off valve/switch on the controlling locomotive is in the "FRT" position as per Instruction 3.2.1 "Exception".

P4.2 Train Brake Tests & Inspection

P4.2.1 Class I Brake Test / HST Departure Test

A. Class I Brake Test Requirements
   1. Commuter & short distance intercity passenger trains:
      a. Once each calendar day that the train is placed or continues in passenger service.
      b. If a train has not been inspected today and will be in passenger service past 11:59pm tonight a Class I brake test and mechanical inspections are required before 11:59pm tonight.
   2. Long distance intercity passenger train:
      a. Prior to train's departure from original/initial terminal, and
      b. Every 1,500 miles or once each calendar day, which ever occurs first, that the train remains in continuous passenger service.
   3. When Class I brake test has expired proceed as required by Instruction P6.2.3E

B. Class I Brake Test Procedure (Engineer may participate in test by manipulating automatic brake valve, performing leakage and alerter test.
   1. Apply proper blue signal protection.
   2. Chock wheels as required to secure train.
   3. Fully apply locomotive independent brake.
   4. Electro-pneumatic brake disabled/turned off, if equipped.
   5. Angle cocks / cut-out cocks, and retaining valve handles must be properly positioned.
   6. Each brake disc is free of any condemnable defect.
   7. Charge train to required pressure. Check state of charge by cutting out the pressure maintaining feature. If brake pipe pressure drops within 5 seconds, the train is not fully charged or excessive leakage exists. Find and correct any source of leakage. Before proceeding with test, be sure to cut in the pressure maintaining feature.
   8. Await signal to apply.
   9. When signal is given to apply, make 20 psi brake pipe reduction.
   10. After exhaust has stopped, cut out pressure maintaining feature.
   11. Wait 30 seconds. On longer trains such as Auto Train, wait 45 seconds.
   12. Check brake pipe leakage-must not exceed 5 psi per minute.
   13. Determine that brake is applied on each car and all brake shoes and pads are firmly seated against the wheel or disc.
   14. Each brake shoe or pad is not below the minimum thickness (varies depending on length of trip).
   15. Each brake shoe or pad is securely fastened and correctly aligned in relation to the wheel / disc.
   16. Brake rigging does not bind or foul.
   17. Piston travel is within prescribed limits.
   18. Brake indicators operate as intended (indicate brakes applied).
   19. The communication of brake pipe pressure changes at the rear of the train is verified (by an application and release of the brakes on the last car in the train).
   20. Await signal to release automatic brake.
   21. When signal to release is given, release automatic brake.
   22. Cut in pressure maintaining.
   23. Determine that all brakes release on each car. Ensure proper shoe / pad clearance exists.
   24. Brake rigging must not bind or foul.
   25. Brake indicators must operate as intended. (indicate brakes released)
   26. Await signal to enable / turn on electro-pneumatic brake, if equipped.

27. When signal is given enable / turn on electro-pneumatic brake.
28. Test EP brake in accordance with local railroad procedures.
29. Make a walking inspection of electro-pneumatic application and release.
30. Communicating (Conductor's) Signal System must be tested and known to be operating as intended. A tested and operating two way radio system meets this requirement.
31. MU equipment - Emergency brake application & alertor must be tested if necessary.

C. HST Departure Test Requirements
1. Prior to train's departure from original/initial terminal, and
2. Every 1,500 miles or once each calendar day, which ever occurs first, that the train remains in continuous passenger service.
3. A High Speed Trainset that misses a scheduled HST Departure test due to delay en route may continue in service to the location where the inspection was scheduled to be performed.

NOTE: Locomotives, including Power Cars must be inspected and tested as required by Instructions 2.1 and 2.2 each calendar day, regardless if train was delayed en route.

D. HST Departure Test Procedure
1. HST Departure Test will be performed by a Tier II QMP in accordance with Standard Maintenance Procedure.

P4.2.2 Class IA Brake Test

NOTE: This test does not apply to High Speed Trainsets

A. Test Requirements
1. When adding Passenger Equipment En Route as per Instruction P6.2.1.
2. When Commuter or Short Distance Intercity Passenger Train equipment has not been used in passenger service for more than 12 hours since the last Class I brake test, unless Summary MAP 1173 indicates that Class IA brake test has been performed.
3. When equipment has been off a source of compressed air for more than four hours since the last Class I brake test.
4. When equipment will be moved between the maintenance facility and originating passenger terminal without a MAP 1173 as per Definition "Passenger Equipment" and Instruction P4.1.4D.
5. When required by Instruction P6.2.3E.
6. Whenever a Class IA brake test is performed, the following information must be noted on "Condition En Route" section of the Summary MAP 1173: Class IA Brake Test Performed, Date, Time, Location and Initials of QP or QMP.

B. Test Procedure.
1. Fully apply locomotive independent brake.
2. Charge train to required pressure at which it will operate.
3. Await signal to apply.
4. Make 20 psi automatic brake reduction.
5. After exhaust has stopped, cut out pressure maintaining.
6. Wait 30 seconds.
7. Check leakage-not to exceed 5 psi per minute.
8. Determine that brakes apply on each car by walking train to directly observe application.
9. Ensure angle cocks and cutout cocks are properly positioned.
10. Await signal to release.
11. Release automatic brake.
12. Cut in pressure maintaining feature.
13. Determine that brakes release on each car by walking train to directly observe release.
14. Communicating signal and/or two-way radio system tested and operating.

15. MU equipment – Perform a pneumatic emergency brake application from the automatic brake valve. Ensure that emergency application is transmitted through the entire train. Recover from emergency application.
16. Verify communication of brake pipe pressure changes at the rear of the train by use of gauge, Two-Way End of Train Device or observe application and release of brakes on rear unit.
17. Brake indicators may be used instead of directly observing the brake application/release at each car ONLY if a QP determines that direct observation poses a safety hazard. See definition of Brake Indicator.
    a. When using brake indicators, employees must position themselves in each car or as close as possible to each car to accurately observe each indicator.
    b. When using brake indicators to determine application/release at each car, indicators must change during application and release (plungers-in/out; lights-amber/green).

P4.2.3 Class II Brake Test

A. Test Requirements

1. Whenever control stand is changed or air brake computer is de-energized (circuit breaker turned off).
2. When previously tested and inspected cars/locomotives are added to a passenger train.
3. When cars or equipment are removed from the train.
4. When Engineer first takes charge of train except for face-to-face relief.

NOTE: When any of the following occurs, it is considered FACE-TO-FACE RELIEF:

- When the inbound Engineer does not leave the equipment unattended and communicates with the outbound Engineer the condition of the brakes and the status (location) of the MAP 1173(s).
- When the inbound Conductor or Assistant Conductor does not leave the equipment unattended and communicates with the outbound Engineer the condition of the brakes and the status (location) of the MAP 1173(s).
- When a mechanical department employee who is a QMP or QP who participated in the required brake test does not leave the equipment unattended and communicates with the outbound Engineer the condition of the brakes and the status of the MAP 1173(s) (located on the locomotive, or in possession of conductor, etc.).

5. After any emergency application of brakes.
6. Where indicated by rule or special instructions.
7. When control valve or brakes are cut out.
8. After determining cause for brake pipe continuity loss (P8.1.2F), make Class II brake test using Two-Way End-of-Train device.
9. Any point where a brake pipe angle cock has been turned except when performing the Two-Way-End-Of-Train device emergency function test.

NOTE: Passenger trains must not depart a terminal or yard, which is a repair point, where a Class II brake test has been performed with brakes cutout, inoperative or defective. To determine a repair point for a particular train, contact CNOC mechanical desk either directly at 1-800-424-0217 or through the train dispatcher.

B. Test Procedure For Other Than High Speed Trainsets

1. Charge system to required pressure
2. Await signal to apply
3. 20 psi automatic brake reduction
4. Brakes apply on rear passenger equipment. It is permissible to verify application at the rear most wheel set/axle. Brake shoe/pad must be firmly seated against the wheel or disc.
5. Await signal to release
6. Brakes release on rear passenger equipment. It is permissible to verify release at the rear most wheel set/axle. Brake shoe/pad clearance must be observed.
7. MU equipment – Perform a pneumatic emergency brake application from the automatic brake valve. Ensure that emergency application is transmitted through the entire train. Recover from emergency application.

8. When rear passenger equipment is equipped with a device (gauge or EOT) capable of indicating/displaying brake pipe pressure, device **must** be used to determine application & release of brakes on rear passenger equipment.
9. When rear passenger equipment is NOT equipped with a gauge or EOT, brake indicators may be used instead of directly observing the brake application/release at rear car ONLY if a QP determines that direct observation poses a safety hazard. See definition of Brake Indicator.
    a. When using brake indicators, employees must position themselves in the rear car or as close as possible to the rear car to accurately observe each indicator.
    b. When using brake indicators to determine application/release at the rear car, indicators must change state during application and release (plungers-in/out; lights-amber/green).
10. Communicating signal and/or two-way radio system tested and operating.

C. Test Procedure For High Speed Trainsets
1. Engineer or QMP will apply Parking Brake
2. Engineer or QMP will charge system to required pressure
3. Engineer or QMP will open CB74 "EP Assist" circuit breaker <u>on lead power car</u> located on electrical locker No. 3
4. Conductor, Assistant Conductor, QP or QMP will give signal to apply air brakes.
5. Engineer, QP or QMP will make a 20 psi automatic brake reduction
6. Conductor, Assistant Conductor, QP or QMP observes 20 psi brake pipe pressure drop on MFD-2 of rear power car
7. Conductor, Assistant Conductor, QP or QMP will give signal to release air brakes.
8. Conductor, Assistant Conductor, QP or QMP observes brake pipe pressure restored on MFD-2 of rear power car
9. Engineer, or QMP will close CB74 "EP Assist" circuit breaker <u>on lead power car</u> located on electrical locker No. 3
10. Conductor, Assistant Conductor, QP or QMP will give signal to apply air brakes.
11. Engineer, QP or QMP will make a 20 psi automatic brake reduction
12. Conductor, Assistant Conductor, QP or QMP observes 20 psi brake pipe pressure drop on MFD-2 of rear power car
13. Conductor, Assistant Conductor, QP or QMP will give signal to release air brakes
14. Conductor, Assistant Conductor, QP or QMP observes brake pipe pressure restored on MFD-2 of rear power car
15. Engineer, Conductor, Assistant Conductor, QP or QMP will ensure that two-way radio system is tested and operating.

NOTE: When MFD-2 on the rear power car is inoperative, Conductor, Assistant Conductor, QP, or QMP will go to the MFDB screen in the Conductor's office to observe the rear Power Car brake application and release. Simultaneously, a second employee assisting with the brake test (Conductor, Assistant Conductor, QP, or QMP) must observe the brake indicators (RED) on the rear Power Car for application and release of the brakes.

P4.2.4 Running Brake Test

A. Test Requirements
1. After leaving initial terminal.
2. Any point where motive power, engine crew or train crew has been changed.
3. Any point where a brake pipe angle cock or end cock has been turned.
4. After any standing brake test has been made.
5. After striking debris on tracks.
6. Electro-pneumatic brake circuit cables between power units and/or cars are disconnected.
7. Periodically, when communication of the two-way end of train device fails en route.
8. When indicated by special instructions.

Union Pacific

8. A running test of train air brakes must be made not more than three (3) miles before descending grades of 1.8% or greater.

Burlington Northern Santa Fe

8. A running test of train air brakes must be made before descending grades listed in the "GRADE TABLE" below.

Subdivision	Location
Cajon	MP 56.6 to MP 80, both tracks
Raton	MP 639 to MP 660
Glorieta	MP 775 to MP 810 & MP 818 to MP 842
Pikes Peak	MP 52 to MP 66
Hi Line	MP 1151 to MP 1166, both tracks
Midway	MP 0.5 to MP 5, both tracks
St. Paul	MP 430 to MP 5, both tracks
Scenic	MP 1694.5 to MP 1731.3
Stampede	MP 41.0 to MP 58.5
Gateway	MP 178.0 to MP 188.0

9. When inadequate brake performance is detected as per Instruction P6.1.1.
10. After test of back-up hose/valve.

B. Test Procedure
   1. Must be made as soon as speed of train permits but not exceeding 20 mph. A Running Brake Test may be made at speeds greater than 20 mph after striking debris, when communication of two-way end of train device fails en route or indicated by special instruction.
   2. During test, locomotive and/or dynamic brake MUST NOT be permitted to apply except when locomotive and/or dynamic brake cannot be released due to equipment configuration.
   3. Apply train air brakes with sufficient force to ascertain whether or not brakes are operating correctly.
   4. If air brakes do not operate properly, train must be stopped, perform walking inspection of a brake application, cause of failure ascertained, corrected, Class II and Running Brake test repeated.

NOTE: Conductors and Engineers must communicate that running brake test has been performed.

P4.2.5 Test from Yard Plant

A. Engineer's brake valve or standard test device must be used.
B. Test device must be connected to end which will be nearest controlling locomotive.
C. Brake system must be charged, tested, and inspected in accordance with the Class I brake test requirements listed in P4.2.1.
D. When road power is coupled, make a Class II brake test before proceeding.
E. If air supply is disconnected for more than 4 hours, train must again be given a Class I brake test in accordance with P4.2.1
F. Yard test device must charge the brake pipe / train brake system to the pressure listed in Section 1.2 (Standard Air Pressures).
G. Mechanical yard air test devices and gauges shall be calibrated every 92 days.
H. Electronic yard air test devices and gauges shall be calibrated annually.
I. If used to test a train, a yard air test device and any yard air test equipment shall be accurate and function as intended.

P4.2.6 Exterior Calendar Day Mechanical Inspection

A. Inspection Requirements
   1. Performed by a QMP once each calendar day on passenger equipment in accordance with Standard Maintenance Procedures.
   2. A long-distance intercity passenger train that misses a scheduled Exterior Calendar Day Mechanical Inspection due to delay en route may continue in service to the location where the inspection was scheduled to be performed.
   3. A High Speed Trainset that misses a scheduled Exterior Calendar Day Mechanical Inspection due to delay en route may continue in service to the location where the inspection was scheduled to be performed.

B. Inspection Procedure

1. Use table below to determine Running gear and/or Non-Running gear defects and necessary action to be taken.

EXTERIOR CALENDAR DAY MECHANICAL INSPECTION DEFECT/ACTION AT TIME OF INSPECTION		
TYPE DEFECT	DEFECT DESCRIPTION	ACTION
Running Gear	• Suspension Components (including Air Bellows) • Draft System Components • Trucks and Components (including Bolster Anchor Radius Rods) • Wheels and Components (including hot journals and locomotive support bearings)	1. Repair 2. Move for repair in a non-revenue train not in passenger service, or 3. Set Out
Non-Running Gear	• Exhaust gases released inside cab or other compartments. • Batteries not properly vented. • Jumper cables – hanging free, exposed wire, broken plugs or receptacles. • High voltage safety labels for exterior doors and cover plates missing • Buffer plates not in place. • Diaphragms not in place or not aligned	May be moved for repair, in passenger service provided: 1. QMP determines that it is safe to do so including all movement restrictions, and 2. Car is locked out and empty. 3. Car may be occupied by crew member only in the performance of duty

P4.2.7 Interior Calendar Day Mechanical Inspection

A. Inspection Requirements

1. Other than High Speed Trainsets - Performed by QMP or QP once each calendar day on passenger carrying cars in accordance with Standard Maintenance Procedures.
2. High Speed Trainsets - Performed by QMP once each calendar day in accordance with Standard Maintenance Procedures.
3. A long-distance intercity passenger train that misses a scheduled Interior Calendar Day Mechanical Inspection due to delay en route may continue in service to the location where the inspection was scheduled to be performed.
4. A High Speed Trainset that misses a scheduled Interior Calendar Day Mechanical Inspection due to delay en route may continue in service to the location where the inspection was scheduled to be performed.

B. Inspection Procedure For Other Than High Speed Trainsets

1. Use table below to determine Non-Running gear defects and necessary action to be taken.

INTERIOR CALENDAR DAY MECHANICAL INSPECTION DEFECT/ACTION AT TIME OF INSPECTION		
TYPE DEFECT	DEFECT DESCRIPTION	ACTION
Non-Running Gear	• Exposed moving parts and electrical equipment not equipped with guards. • Floors that contain oil, water, waste, or any obstruction • Manual door releases not in place. • Emergency equipment… as applicable, missing.	May be moved for repair, in passenger service provided: 1. QP or QMP determines that it is safe to do so, and 2. Car is locked out and empty. 3. Car may be occupied by crew member only in the performance of duty
	• Safety related signage missing or not legible. • High voltage safety labels for interior doors and cover plates missing • Emergency brake valves not stenciled.	May remain in passenger service until the next interior calendar day inspection, provided QP or QMP determines: 1. that the repairs cannot be made, and 2. equipment is safe to move.
	• Trap doors that do not safely operate or securely latch.	May remain in passenger service until the next interior calendar day inspection, provided QP or QMP determines: 1. that the repairs cannot be made, and 2. equipment is safe to move. 3. Defective trap doors must be secured by locking out door for which it is used.

INTERIOR CALENDAR DAY MECHANICAL INSPECTION DEFECT/ACTION AT TIME OF INSPECTION		
TYPE DEFECT	DEFECT DESCRIPTION	ACTION
	• Vestibule steps that are not illuminated.	May remain in passenger service until the next interior calendar day inspection, provided QP or QMP determines: 1. that the repairs cannot be made, and 2. equipment is safe to move. 3. Vestibule may be used solely at high platforms when steps are non-illuminated
	• End doors and side doors that do not operate safely or as intended.	May remain in passenger service until the next interior calendar day inspection, provided QP or QMP determines: 1. that the repairs cannot be made, and 2. equipment is safe to move. 3. At least one operative and accessible door must be available on each side of car. A notice must be displayed directly on each defective door
	• Seats or attachments broken or loose.	May remain in passenger service until the next interior calendar day inspection, provided QP or QMP determines: 1. that the repairs cannot be made, and 2. equipment is safe to move. 3. Broken or loose seats or seat attachments must be rendered unusable and display a notice indicating defect directly on seat.

C. Inspection Procedure For High Speed Trainsets

1. Performed by QMP in accordance with Standard Maintenance Procedures.

P5.0 TRAIN HANDLING

See 5.0 All Operations Section for instructions.

P6.0 EN ROUTE CONDITIONS

P6.1 General

P6.1.1 Inadequate Performance of Train Brakes

A. If brake performance is found to be inadequate for the brake application made, train must be stopped and a walking inspection of a brake application must be performed to determine cause.

B. If no defects are found, train may proceed, making periodic running brake tests.

C. When equipped with Two-Way End of Train Device, verify changes in brake pipe pressure at rear of train during running brake tests.

P6.1.2 Failure To Maintain Required Pressure

A. If pressure required for safe handling of train cannot be maintained, train must be stopped, secured and train dispatcher notified.

B. If main reservoir pressure falls below 100 psi, immediately bring train to a safe stop.

C. **NOTE:** If brake pipe pressure falls below 50 psi, you will not be able to transmit an emergency application of the brakes.

P6.1.3 Sticking Brakes

A. Train and engine crews must keep a lookout for brakes sticking on their train and on trains being met or passed.

B. They must advise one another of location in train of cars with sticking brakes.

C. Probable causes of sticking brakes:

1. Hand brake/parking brake not fully released.
2. Overcharged brake system.
3. Binding or fouling brake rigging.
4. Retaining valve not in release position.
5. Defective control valve.
6. Excessive brake pipe leakage.
7. Improper handling of ABV.

D. If brakes are stuck from improper handling of ABV, usually an additional heavy automatic brake reduction and release will correct condition.

P6.1.4 If Train Breaks In Two

A. SHUT DOWN AND ISOLATE HEP, IF EQUIPPED, AS SOON AS POSSIBLE.

B. After train is re-coupled and brake system has been recharged, perform a Class II brake test.

C. After proceeding, as soon as speed of train permits, a Running Brake test must be made.

P6.1.5 Reporting Defects – Report defects according to Instruction 9.1.1

P6.1.6 Emergency Application

A. ABV initiated

1. Full emergency brake effort must be allowed to apply.
2. Leave handle in emergency until stopped.
3. Move throttle/controller to “Idle”/”Off”.
4. **NOTE:** It is acceptable to regulate locomotive brake cylinder pressure from an undesired emergency (UDE) brake application.

B. When equipped with Two-Way End-Of-Train device, engineer or other train crew members must activate the Two-Way End-Of-Train device using the “emergency” toggle switch when any emergency application occurs.

C. Conductor′s valve or back-up hose

1. Open valve quickly.
2. Leave valve open until stopped.
3. Do not attempt to release brakes until stopped.

D. Recovery from emergency after stopping

1. If conditions required use of conductor’s valve, caboose valve or back-up hose, reset it.
2. Move ABV to release.
3. Inspect ENTIRE train for derailed cars, shifted loads, etc.
4. Perform a Class II brake test.

E. After proceeding, a Running Brake test must be made.

P6.1.7 Inoperative Locomotive Dynamic Brake

A. On locomotive so equipped, Engineer will be informed of the operational status of the dynamic brake when first taking charge of the train.

B. If the locomotive is found to have an inoperative dynamic brake reference section 2.7.13.

METROLINK
SMP 100

METROLINK

Southern California Regional Rail Authority
Equipment Condition Report

SMP 100

NO. ~~B165461~~

LOCOMOTIVE NUMBER: S.C.A.X. – POSITION IN CONSIST: _____

USE SEPARATE REPORT FOR EACH UNIT IN CONSIST.

Each locomotive unit shall be inspected in accordance with CFR title 49 parts 229.21, and 236.587.
Cab Card SMP 101 must be signed.

NAME OF EMPLOYEE MAKING DAILY INSPECTION	EMPLOYEE #	OCCUPATION	PLACE	DATE	TIME

SEAL NUMBERS

ATS		SPEEDOMETER OVERSPEED	
ALERTOR		DOOR OVERRIDE	
ZERO SPEED		EVENT RECORDER	
HORN			

ATS DEPARTURE TEST

NAME OF EMPLOYEE MAKING ATS TEST	EMPLOYEE #	OCCUPATION	PLACE	DATE	TIME

CONDITION OF EQUIPMENT

SPEED INDICATOR		CROSSING BELL	
H.E.P.		HORN	
DYNAMIC BRAKES		ATS	
BRAKES & RIGGING		ALERTOR	
RADIO		WIPERS	
SANDERS		MAIN RESERVOIR PRESSURE	PSI
BRAKE PIPE PRESSURE	PSI		

FAILURES EN ROUTE	ENGR. INIT.	REPAIRED BY

THE ABOVE WORK HAS BEEN PERFORMED, EXCEPT AS NOTED, THE REPORT IS APPROVED, AND THIS UNIT IS AVAILABLE FOR SERVICE.

SIGNATURE OF EMPLOYEE APPROVING UNIT FOR SERVICE	OCCUPATION	PLACE	DATE	TIME

SIGNATURE OF LOCOMOTIVE ENGINEER	LOCATION	DATE	TIME

"USE REVERSE SIDE FOR ADDITIONAL COMMENTS OR DETAILS"

SMP 100 ORIG. – MECHANICAL MAINTENANCE FACILITY / COPY – RETAINED AT ENGINES INITIAL TERMINAL

METROLINK
SMP 101

BOMBARDIER
TRANSPORTATION

BOMBARDIER MASS TRANSIT
FRA RULE NO. 229 INSPECTION RECORD
SERVICE OPERATION

SMP 101
REV. 7/98

Unit No. _____

DATE	TIME	LOCATION	DATE	TIME	LOCATION	DATE	TIME	LOCATION	DATE	TIME	LOCATION
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
	M			M			M			M	
DIESEL LOCOMOTIVES TAKE ENGINE LUBE OIL SAMPLE EVERY 15 DAYS DATE _____ LOCATION _____			DIESEL LOCOMOTIVES TAKE ENGINE LUBE OIL SAMPLE EVERY 15 DAYS DATE _____ LOCATION _____			DIESEL LOCOMOTIVES TAKE ENGINE LUBE OIL SAMPLE EVERY 15 DAYS AND GEARBOX AND AIR COMPRESSOR AT 45th DAY DATE _____ LOCATION _____			DIESEL LOCOMOTIVES TAKE ENGINE LUBE OIL SAMPLE EVERY 15 DAYS DATE _____ LOCATION _____		

THIS RECORD CARD TO BE CARRIED IN LOCOMOTIVE

METROLINK
SMP 130

METROLINK **NON-COMPLYING LOCOMOTIVE** SMP130

Locomotive Number _____

Inspecting Carrier _____

Inspection Location _____ Date _____

Defects (s) _____

_____

Movement Restrictions _____

_____

Destination _____

Signature _____

Original - Engineer; 1st Copy - File; Hard Copy - Locomotive FRA Rule 229.9

METROLINK
SMP 1173

METROLINK ***Southern California Regional Rail Authority*** **SMP 1173**

Class 1 Brake Test and Inspection Certificate

☐ **An Initial Terminal Air Brake Test has been satisfactorily performed per CFR49 Part 232.12 for freight/work trains.**

TO BE COMPLETED AND SIGNED BY PERSON(S) PERFORMING AIR BRAKE TEST AND INSPECTION

Class 1 Brake Test has been satisfactorily performed as required by CFR 49 Part 238.313				
Loco #	Loco #	Loco #	Cab Car #	Number of Cars
Date	Time	Location	Name	Employee No.

Following equipment has received an Exterior and Interior Calendar Day Mechanical Inspection as required by CFR 49 Part 238.303 and 238.305.									
Car #	Car #	Car #	Car #	Car #	Car #	Car #	Car #	Car #	Car #
Exterior Inspection performed by:									
Name		Employee No.		Date		Time		Location	
Interior Inspection performed by:									
Name		Employee No.		Date		Time		Location	

Communications System: ☐ Operative ☐ Inoperative **Train Set for: ☐ Graduated Release ☐ Direct Release**

TO BE COMPLETED AND SIGNED BY INBOUND ENGINEER (AMT-3, 14.4):

Locomotive #(s) or Cab Car #	Date	Time	Number of Cars	Condition of Brakes	Engineer's Signature
				☐ Acceptable ☐ Unacceptable	
				☐ Acceptable ☐ Unacceptable	
				☐ Acceptable ☐ Unacceptable	

METROLINK
SMP 129

METROLINK

CAR MAINTENANCE TASKS

133975

Car Number

Date	Train Number	Task (Defect)	Corrective Action	Employee Signature

Report all Defects and Corrective Action on SMP Form 101

SMP FORM 129

METROLINK
SMP 175

METROLINK
SMP 176