

General Operating Instructions (GOI)**Table of Contents****Section 1 Special Instructions / General Information
and Safety Instructions / Policies**

Definition of Train / Movements.....	2
Special Control Zone (SCZ)	3
Movements Operating Over Unidentified Track Occupancy (UTO).....	5
Movements Operating Over Suspected Broken Rail	5
Unidentified Track Occupancy (UTO) Behind a Movement	6
1.0 Track Unit Operated as a Train	6
2.0 Operation of Movements WITHOUT a Manned Caboose.....	9
3.0 Operation of Movements WITH a Manned Caboose and Reduced Crew	9
4.0 High Voltage Electrical Cables	10

Section 2 Reporting Requirements

1.0 Initial Reporting Requirements	12
2.0 Protecting the Accident Scene	13
3.0 Injuries or Fatalities	15
4.0 Train/Vehicle and Trespasser Accidents.....	15
5.0 Environmental Incidents	16
6.0 Unsafe Signal Failures	17

Section 3 Regulatory Requirements

1.0 Railway Safety Act (RSA).....	20
2.0 Medical Requirements.....	21
3.0 Work/Rest Rules for Railway Operating Employees	22
4.0 Transportation Safety Board (TSB) Act.....	22
5.0 Connivance in Illegal Transportation By Railway Employees	23
6.0 Laws Governing Wildlife	23
7.0 General Legal Requirements.....	23

Section 4**Radio Procedures****RADIO PROCEDURES**

1.0	General	26
2.0	Operation of Locomotive Radio Units	26
3.0	Operation of Portable Radios	26
4.0	Transmitting Technique	26
5.0	Calling Procedures	27
6.0	Emergency Communication Procedures	27
7.0	CROR Rule 123.2	27
8.0	Procedure for Changing Radio Channels	28
9.0	CROR Rule 119	28

RAILWAY EMPLOYEE COMMUNICATION RULE

1.0	Scope	29
2.0	Definitions	29
3.0	Emergency Radio Transmissions	29
4.0	Radio Communication	29
	Spectra Railroad Radio Operating Instructions	30
	GE Railroad Radio Operating Instructions	31
	AAR To CP Radio Channel Cross Reference	32

Section 5**Train Inspections****Hot Box Detector and WILD Instructions**

TRAIN INSPECTIONS	34	
1.0	Inspecting SPECIAL Dangerous Commodities	34
2.0	Use of Portable Radios when Making Train Inspection	34
3.0	Mechanical Safety Inspections	34
4.0	Pre-Departure Inspection Procedures (by other than a certified car inspector)	34
5.0	Train Inspection Intervals	35
6.0	Locomotive Engineers Inspecting Passing Trains	35
7.0	Crew Change Pull-by Inspections	35
8.0	Pull-by Inspection Procedure	36
9.0	Inspection When Equipment is Stopped on a Bridge	37
10.0	Defect Suspected - IMPORTANT	37
11.0	Overheated Bearings	37
12.0	Overheated, Hot, Skidded, and Shelled Wheel Defects	38
13.0	Sticking Brakes	40
14.0	Cutting Out Car Air Brakes	40
15.0	Inspection Required Following an Emergency Brake Application While Moving	40
16.0	Reporting Detention or Defects	41
17.0	Crew to Crew Form	41
HOT BOX DETECTOR and WILD INSTRUCTIONS	42	
18.0	General	42
19.0	Hot Box Detectors (HBD) Description	42
20.0	HBD Talker Description	43
21.0	Procedures – Approaching and Passing Over HBDs	45
22.0	HBD Alarms and Procedures Summary	46
23.0	Alarm Procedures	47
24.0	Procedures for Locating Defects	49

25.0	Incorrect Axle Count	50
26.0	No Defect Found - Hot Box	50
27.0	SPECIAL Dangerous at Double Asterisk (**) HBD – Mandatory Inspection	50
28.0	Reporting Defective HBDs	51
29.0	Hot and Cold Weather Temperature Speed Zones	51
30.0	Steam Locomotive CP 2816	51
31.0	Wheel Impact Load Detectors (WILD)	51

Section 6**TIBS Instructions**

1.0	Trains Operating With Train Information Braking Systems (TIBS)	54
2.0	TIBS Arming Feature	55
3.0	Operation and Displays of Sense and Braking Unit (SBU)	56
4.0	Operation of Highly Visible Marker (HVM)	57
5.0	Operation of IDU	57
6.0	Operation of Model 6656 CDU	58
7.0	Operation of Model 6696 CDU	58
8.0	ATX – Air Turbine SBU	60
9.0	Motion Detector System	61
10.0	Emergency Braking Feature	61
11.0	Communications Test	61
12.0	Alarms 62	
13.0	Pre-Installation Testing of SBU at Major Terminals:	62
14.0	Pre-installation Testing of SBU at Other Than Major Terminals	62
15.0	Installation of SBU	63
16.0	Pre-Departure Testing of TIBS	63
17.0	Installation of Display Unit	64
18.0	Shop Track Tests of Display Unit	64
19.0	Definitions & Operating Procedures in Event of TIBS Failure	65
20.0	Distance Measuring Device (DMD)	66
21.0	Proper Protection Required	66
22.0	Transportation (Deadheading) of SBUs	67
	End of Train Setup for TIBS EMD Fire Screen	68
	End of Train Setup for TIBS GE ACs	68

Section 7**Train Area Marshalling; Switching;
Equipment and Load Marshalling; and Handling**

Train Area Marshalling

1.0	Train Area Marshalling (TrAM) Overview	70
2.0	Definitions	70
3.0	Train Area Marshalling Messages	73
4.0	Verifying Train Area Marshalling	74
5.0	Cushioned Drawbar (CD) Rules	77
6.0	Mixed Train Instructions – Conventional and Distributed Power	79
7.0	Distributed Power Train Instructions – All Train Types	80
8.0	Ascending Grade Weight Zone (AGWZ) Rules	82
13.0	Speed Restrictions	84
14.0	Heavy Cars and Loads – Authority Required	86

15.0	Switching, Spotting, and Loading	87
16.0	Marshalling Restrictions.....	90
17.0	Scale Test Cars	93
18.0	Cranes, Combination Crane-Pile Drivers, and High-Rail Cranes.....	95
19.0	Service Equipment Cars – Person in Charge Responsibilities.....	97
20.0	Service Equipment Cars – Train Crew Responsibilities	98
21.0	Business Cars.....	99
22.0	Business Car Trains	100
23.0	Track Evaluation Cars (TEC) - 63, 64, 65, 68, 424993 & 424994.....	101
24.0	Brake Pipe Run-around Hose.....	102
25.0	Container Traffic - Electric Power Cable Strung Between Cars	103
26.0	Handling Continuous Welded Rail (CWR) or Strings of Bolted Rail.....	104
	APPENDIX 1: Train Area Marshalling Messages.....	107
	APPENDIX 2: Locomotive haulage ratings and equivalent axle counts	110

Section 8**Dangerous Goods**

1.0	Car Inspection by Train or Yard Crews	112
2.0	Safety Marks (e.g., Placards)	112
3.0	Documentation.....	113
4.0	Record Position of Placarded Cars	116
5.0	Switching.....	117
6.0	Marshalling.....	117
7.0	Emergency Procedures	119
8.0	SPECIAL Dangerous Commodities.....	121
9.0	Positive Chain of Custody on Cross Border shipments of Alert Cars.....	122

Section 9**Passenger Train Procedures**

1.0	Passenger Train Emergency Procedures - General.....	126
2.0	Medical Emergency	126
3.0	On-Board Fire	127
4.0	Bomb or CBRN Weapons Threat	127
5.0	Derailment.....	129
6.0	Passenger Evacuation Guidelines.....	129
7.0	Passenger and Mixed Trains - General.....	132
8.0	Vestibule Doors, Platforms, Curtains, Guard Rails, Side and End Gates, Tail Gates, Chains and Bars.....	133
9.0	Safety Inspections	134
10.0	Pre-departure Inspections	134
11.0	Hazardous Condition	134

Section 10**Dimensional Traffic**

1.0	General	136
2.0	Protection Notices	136
3.0	Classification.....	142
4.0	General Restrictions	143
5.0	Handling Procedures	146
6.0	GBO	148

Section 11	Security
1.0 General Security	150
2.0 Security Alert Levels	150
3.0 Suspicious Objects	150
4.0 Persons on CP Property	151
5.0 Persons Riding Trains	151
6.0 Employee Identification	151
7.0 Disclosure of Sensitive Information	152
8.0 Border Crossing	152

Section 12	Track Signs
Whistle Post	154
Prohibited Whistle Post	154
Mile Post	154
Structure Number Sign	154
Switch Mile Sign	154
Station Mile Sign	154
Station Name Sign	154
Station Name Sign (Alternative)	154
Begin Heavy Grade Sign and End Heavy Grade Sign	154
Begin Mountain Grade Sign and End Mountain Grade Sign	154
Advance Speed Sign	155
Permissible Speed Sign	155
Special Speed Sign	155
Stop Sign	155
End of Track Sign	155
Railway Crossing at Grade and Drawbridge Sign	155
Beginning of (named) Railway Sign	155
Block and Circuit End, Begin and End CTC Signs	156
Restricted Clearance Sign	156
Snow Plow and Flanger Sign	156
Begin Measured Mile Sign and End Measured Mile Sign	156
Advance Interlocking Sign	156
Advance Yard Limit Sign	156
Yard Limit Sign	156
Advance Cautionary Limit Sign	156
Cautionary Limit Sign	157
Switching Zone Sign	157
Dimensional Zone Sign	157
Designated Switch Sign	157
Main Track Begins Sign	157
Main Track Ends Sign	157
Engines Prohibited Beyond This Point Sign	157
Spotting of Equipment Prohibited Beyond This Point Sign	157
Derail/Derail Number Sign	157
Derail Switch Sign	158
Overhead Wire Sign	158
Advance TOP Limit Sign	158
TOP Limit Sign	158
Lubricator Location Sign	158
Test Site Location Sign	158
Dimensional Bulge Sign	158

Section 13 **Air Brake Tests and Procedures**

1.0	General	160
2.0	Locomotive Brake Test	161
3.0	RSC (Safety Control System)	162
4.0	Locomotive and Yard Test Plant Air Pressure Settings	163
5.0	Train Brake Tests	164
6.0	No 1 Brake Test	165
7.0	No 1-A Brake Test	166
8.0	Cars Brake Tested Prior to Adding to a Train	166
9.0	Continuity Test	166
10.0	Brake Pipe Continuity Test (ECP Trains)	167
11.0	Running Brake Test	167
12.0	Train Brake Test Using a Backup Hose or Valve	168
13.0	Snow Plow Brake Test	168
14.0	Block Swaps	168
15.0	Transfer Movements	168
16.0	Movement of Cars and Locomotives with Inoperative Brakes	169
17.0	Recording the Train Brake Status	170
18.0	Trains for Interchange	172

Section 14 **Hand Brakes – Leaving Equipment**

1.0	Hand Brake Policy	174
2.0	Leaving a Portion of a Train Standing With Emergency Air Brakes Applied	176
3.0	Leaving a Train Unattended	177
4.0	Leaving a Locomotive	178
5.0	Spotting of Equipment Prohibited Sign	178
6.0	Winter Operation (Nov 15 – Mar 15) - Air Conservation Instruction	179

Section 15 **Locomotive and Train Operation**

1.0	Duties of the Locomotive Engineer	182
2.0	General Instructions	182
3.0	Maximum Speed of Locomotive and Rail Diesel Car Consists	183
4.0	Number of Locomotives in a Basic Consist	183
5.0	Handling of Locomotives NOT Equipped with Coupler Alignment Control	184
6.0	Operating Restrictions Between Thunder Bay and St-Martin Jct.	185
7.0	Dead or Disabled Locomotives	185
8.0	Pre-Departure Locomotive Inspections	187
9.0	Movements Not Controlled by the Lead Locomotive, Pilots	188
10.0	Winter Operation: Leaving Locomotives Unattended - (Nov 15 - Mar 15)	188
11.0	Draining A Locomotive In Freezing Weather	189
12.0	Causes of a PCS Operation (Pneumatic Control or Power Cut-off Switch)	190
13.0	Recovering a PCS Following a Penalty Brake Application	191
14.0	Recovering a PCS Following an Emergency Brake Application	191
15.0	Changing Operating Cab of a Multiple Locomotive Consist	191
16.0	Joining a Locomotive Consist	192
17.0	Starting/Stopping the Diesel Engine - Battery Knife Switch	192
18.0	Starting/Stopping the Diesel Engine - GMs and GEs	193
19.0	Engine Shutdown Account Crankcase Overpressure	195

20.0	Locomotive Stop Start Systems	195
21.0	Operating over Railway Crossings at Grade	196
22.0	Operating Through Water	196
23.0	Rail Diesel Cars (RDC).....	197
24.0	Locomotive Load Meter	197
25.0	Locomotive Speed Indicators	197
26.0	Locomotive Event Recorders & Cameras	198
27.0	Pumping Air	198
28.0	Response to Alarms	198
29.0	Car Equipment Instructions	200
30.0	Work Equipment and Snow Plows - Connecting Air	201
31.0	Overcharged Conditions.....	201
32.0	GE AC Locomotives - Special Instructions.....	201
33.0	Fire Season and Prevention - Locomotive Exhaust	202
34.0	Broken Drawbar - Locomotive Towing Cable Safety	202
35.0	AC Locomotive Electronic Display Screen Failure	203
36.0	Snowblaster Operations – If equipped	204
APPENDIX 1: Instructions For Calculation of Haulage Capacity		205
APPENDIX 2: Preferred Marshalling Examples: (applicable to items 5.3 and 7.4).....		206

Section 16**Train Handling**

1.0	General Instructions	208
2.0	Use of the Independent Brake.....	209
3.0	Use of the Automatic Brake.....	209
4.0	Reporting Undesired Brake Releases	210
5.0	Minimizing Sticking Brakes.....	210
6.0	Emergency and Penalty Brake Applications	210
7.0	Dynamic Braking (DB).....	211
8.0	Restrictions When Moving Backward.....	214
9.0	Assisting Locomotive(s).....	215
10.0	Introduction to Train Handling Guidelines	217
11.0	Starting Freight Trains	217
12.0	Stopping Freight Trains	217
13.0	Back-Up Movements	217
14.0	Slowing or Controlling Freight Trains	218
15.0	Definition of Track Profiles.....	218
16.0	Passenger Train Handling.....	220
17.0	Fuel Conservation	220
APPENDIX 1: Descending Heavy Grade Job Aid		223
APPENDIX 2: Pacing Chart		232

Section 17**Distributed Power**

Distributed Power Operations	234
1.0 Introduction	234
General Instructions	236
2.0 Locotrol - Restrictions	236
3.0 Remote Independent Application and Release	237
4.0 Automatic Brake	237
5.0 Remote(s) Communication	239
6.0 Controlled Tractive Effort feature (CTE Mode) on ES4400AC Locomotives.....	241
Locotrol Startup and Shut Down	242
7.0 Preparing Locotrol Equipment for Service.....	242
8.0 Shutting Down Locotrol (Unlinking)	247
9.0 Changing Ends	249
LOCOTROL OPERATION	253
Front Group and Back Group	253
10.0 MU Operation (Front Group).....	253
11.0 Independent Motoring (Back Group)	253
Brake Tests	254
12.0 Train Air Brake Test.....	254
13.0 Brake Pipe Continuity - IMPORTANT (as per GOI Sec 13 item 9.3)	257
Coupling/Uncoupling and Break-in-Two	258
14.0 Coupling Lead and Remote Locomotives (with/without cars)	258
15.0 Uncoupling Lead and Remote Locomotives (with/without cars).....	259
16.0 Break-in-Two.....	259
Emergency and Penalty (PCS) Brake Application Recovery	260
17.0 Emergency and Penalty (PCS) Brake Application Recovery	260
Locomotives or Trains Being Left Unattended	261
18.0 Locomotives or Trains Being Left Unattended	261
Loading and Unloading	262
19.0 Tower Control - Roberts Bank Instructions.....	262
20.0 Slow Speed Control	263
Alarms and Displays	266
21.0 Audible Alarms – Locotrol IV and LEB	266
22.0 Alarm Displays – Locotrol IV (appropriate remotes will be indicated on console).....	266
23.0 Data Display Panel – Locotrol IV (appropriate remotes will be indicated on console)....	267
24.0 Alarm Displays – LEB.....	267

General Operating Instructions (GOI)

Section 1



**Special Instructions / General Information
and Safety Instructions / Policies**

TABLE OF CONTENTS

Definition of Train / Movements.....2

Special Control Zone (SCZ)3

Movements Operating Over Unidentified Track Occupancy (UTO).....5

Movements Operating Over Suspected Broken Rail5

Unidentified Track Occupancy (UTO) Behind a Movement6

1.0 Track Unit Operated as a Train6

2.0 Operation of Movements WITHOUT a Manned Caboose.....9

3.0 Operation of Movements WITH a Manned Caboose and Reduced Crew9

4.0 High Voltage Electrical Cables10

Definition of Train / Movements

In the application of the CROR definition of a Movement(s), where the term “train” appears within the GOI, unless specifically identified, it also applies to a transfer and/or engine in yard service.

1

SPECIAL CONTROL ZONE (SCZ)

CP - SYSTEM SPECIAL INSTRUCTION

IMPORTANT: The following special instruction only applies when a GBO declaring Special Control Zone is in effect.

SPECIAL CONTROL ZONE (SCZ)

Definition:
 A method of control used in situations where SCZ System Special Instruction applies. Within SCZ, the Site Supervisor will issue instructions to co-ordinate track work, the operation of movements and track units.

Director Operations - NMC must consult with Engineering Services and S&C. System Rules must be advised. Service Area Manager – Field Operations along with Director Operations – NMC authorize Special Control Zone.
Within limits specified by GBO:
CTC is withdrawn from service and main track(s) and signalled siding(s) are designated as “NON-MAIN TRACK,” or OCS (or OCS/ABS) is withdrawn from service and main track(s) are designated as “NON-MAIN TRACK.”
Unless otherwise specified, interlocking limits remain in service.
Unless otherwise indicated, all signal indications within the specified limits are suspended and Rules 405-439 do not apply.
Rule 105 applies.
All GBO within the limits remain in effect.
Movements must not exceed 15 miles per hour while the leading end of the movement is within the limits. Track units must not exceed 15 miles per hour.
All movements within the Special Control Zone must be coordinated by the Site Supervisor.
In the application of Rules 26 and 40.1 the Site Supervisor must be advised. The provisions of Rule 26(d) apply.
Speed restrictions not protected by Rule 40.1 may be provided under the provisions of Rule 43. All Rule 43 (slow track protection) within the limits remain in effect unless cancelled.
All Rule 42 and/or TOP within the proposed limits should be cancelled before the GBO declaring Special Control Zone in effect is issued. Exception: When necessary to maintain protection, Rule 42 and/or TOP may remain in effect until Special Control Zone GBO is in effect.
Unless otherwise instructed by the Site Supervisor, dual control switches and dual control switch point derails must be placed in hand position. Before moving over a dual control switch or dual control switch point derail, a crew member must observe that the switch points are lined for the route to be used.
Unless manual protection is provided, road crossings equipped with automatic warning devices must not be obstructed until the warning devices have been operating for at least twenty seconds.
Within Special Control Zone, a clearance is not required. Before entering or moving within the zone, all movements and track units must receive permission from the Site Supervisor.
Prior to cancellation of the Special Control Zone, the Site Supervisor must inform all concerned, ensuring protection is in place when required, and advise the RTC accordingly.
Note: Instructions for the proper application of Special Control Zones, Question & Answer guide and SCZ check list to this system special instruction, are available on RailCity under: Departments > Operations > Safety & Environmental Services.



The GBO advising of a SCZ will be issued as follows:

(EFFECTIVE AT 0800 JUNE 1, 2000)
SPECIAL CONTROL ZONE IN EFFECT AND
CTC WITHDRAWN FROM SERVICE
ON MAIN TRACK AND SIGNALLED SIDINGS
BETWEEN WESTWARD SIGNALS 11 AND 11B AT BORDEN WEST AND
EASTWARD SIGNALS 30 AND 30B AT CANTIC EAST
CANADA SUB

BE GOVERNED BY SITE SUPERVISOR AND
SPECIAL CONTROL ZONE SPECIAL INSTRUCTION

1

MOVEMENTS OPERATING OVER UNIDENTIFIED TRACK OCCUPANCY (UTO)

Note: The provisions of this policy also apply in controlled interlockings.

Note: “QUALIFIED ES personnel” in this policy refers to a person qualified in Operation over Rail Breaks & Pull Aparts.

1. Movements may be authorized to operate over the track which contains the UTO until such time as the responding Engineering Services (ES) personnel arrive in the area and are ready to proceed with their investigation of the condition.
2. Movements must NOT be authorized to operate at any time, in any territory, if it is KNOWN that there is an unrepaired broken rail, except under the supervision of a QUALIFIED ES employee who must be at the site of the broken rail.
3. Movements may be operated over a broken rail which has received temporary repairs, in accordance with the instructions of a QUALIFIED ES employee.
4. When a movement operating at restricted speed (“on the lookout for broken rails”) discovers a broken rail, the movement must stop immediately and await the arrival of a QUALIFIED ES employee at the site to determine if the movement may continue under the supervision of such qualified ES person, or if the rail must receive temporary or permanent repairs first. The movement may then only resume operation once permission has been received from the RTC.

MOVEMENTS OPERATING OVER SUSPECTED BROKEN RAIL

(including other track/equipment unusual conditions).

When a movement passes over a point en route that creates a loud noise, unusual locomotive ride or other indications consistent with the possibility of a broken rail, whether in signalled or non-signalled territory, the following must be adhered to.

- a) Speed must be immediately reduced to 10 MPH and a pull-by inspection or passing train inspection on at least one side of the movement must be performed as soon as possible. The crew must immediately report their observation to the RTC.
- b) The provisions of “POLICY FOR OPERATING MOVEMENTS OVER UNIDENTIFIED TRACK OCCUPANCY (UTO)” apply.

Sequence of events

- Crew member “feels” possibility of broken rail.
- Reduce to 10 MPH.
- Report this observation and delay to RTC.
- Perform a Pull-by or Passing train inspection.
- Advise RTC of result of inspection.

- Provisions of UTO policy step 1 applies.
- If a broken rail exists, steps 2&3 also apply.
- Requirements of UTO policy step 4 may be modified by the GBO.

**UNIDENTIFIED TRACK OCCUPANCY (UTO)
BEHIND A MOVEMENT**

1. When more than one unknown Track Occupancy Light appears on an RTC display screen after the passage of the same movement, the RTC must immediately notify the crew to stop and inspect.
2. The speed of the movement must be immediately reduced to 10 MPH and a pull-by inspection performed at the first safe location, avoiding impediments to a safe inspection such as bridges.
3. The inspection must include a pull-by inspection of one side of the equipment at a speed **not exceeding 10 MPH**, followed by a stationary inspection on the other side. BOTH sides of ALL cars and locomotives must be inspected for potential wheel defects. Inspection of entire movement must be completed even if defects are found.
Note: This inspection must be performed by either a crew member or qualified Field Operations personnel.
4. If any wheels are found or suspected to have defects, that piece of equipment must be set off at that location if possible, OR moved at a speed **not exceeding 10 MPH** to the nearest location where it can be set off, but only if deemed safe to move by the person making the inspection.
5. Results of the inspection must be recorded on the Crew to Crew form, noting "UTO inspection".
6. If another UTO is displayed behind a movement that has already received a UTO inspection, such movement must again be stopped immediately until full inspection can be made by a certified car inspector.

In situations where the crew has been advised by the RTC to inspect and it is further determined that the UTO was not caused by railway equipment, the RTC will advise the crew that they are relieved from performing the inspections required by the UTO policy. The crew must draw a line through any related entry on the Crew to Crew Form and enter "UTO cancelled" with the date, time and RTC initials for the UTO that was removed.

1.0 Track Unit Operated as a Train Error! Bookmark not defined.

- 1.1** When a track unit is operating under the direction of a conductor, it must be operated as a train in accordance with CROR.

When a track unit is operating under the direction of an operating officer or operating foreman, it may be operated and protected as either a train, or a track unit. When operated and protected as a track unit, "TRACK UNIT SPEED" MUST NOT BE EXCEEDED AT ANY TIME.

In the application of Rule 106, when a track unit is operated as a train:

- the operator of the track unit is a crew member and will perform all duties of the locomotive engineer relating to the operation of the track unit;
- the conductor, operating officer or operating foreman will perform the duties of the conductor and all other duties of the locomotive engineer not relating to the operation of the track unit;
- the conductor is responsible for all authorities and must ensure that the operator of the track unit is aware of the contents of a GBO, clearance or other authority, and arrangements for protection with foremen and other crews, before such authority or arrangements are acted upon.

Note: An operating foreman is a qualified foreman who has also received proper training in the CROR Rules pertaining to movements.

When a track unit is to be operated as a train, the operator of the track unit must be in possession of a valid "RQ" or "A" certificate of rules qualification. This includes contracted employees of outside companies.

- 1.2** Maximum speed for a track unit operated as a train is time table authorized speed for freight trains or maximum speed authorized for that track unit, whichever is the lesser.

At locations where Rule 40.2/840.2 is applicable, track units operated as a train must not exceed track unit speed.

Maximum speed for Sperry Cars is 40 MPH.

- 1.3** A track unit operated as a train must be equipped with all signal appliances necessary to comply with requirements of CROR.

1.4 The following track units operate signal systems reliably and must comply with signal indications when operated as a train:

- Harsco Track Technology: RMS series production rail grinders (number of assigned diesel unit will be used in train designation).
- Loram: RG series production rail grinders
- Sperry: All SRS 100 series rail bound Sperry cars.

Note: This excludes Sperry Hi-Rail trucks.

- Plasser: Super Cat (520637), PTS-62 (5220-02).

1.5 Other track units when operating as a train, (including Sperry units listed above WHILE TESTING) will NOT operate signal systems reliably and, if not continuously coupled to standard railway equipment, must be governed as follows:

- a) Within ABS in OCS
 - Must be authorized by clearance to “Work Between”.
 - Rules 405-439 do not apply.
- b) Within CTC
 - Must be authorized by Rule 577.
 - Rules 405-440 do not apply.

Exception: When a Sperry Car (while testing) is authorized by Rule 577, Rule 439 applies when a controlled signal governs operation leaving the authorized limits indicates STOP.
- c) Within Interlockings EXCEPT Railway Crossings at Grade and Drawbridges
 - Must be authorized by the provisions of Rule 577.
 - Rules 405-439 do not apply.

Exception: When a Sperry Car (while testing) is authorized by Rule 577, Rule 439 applies when a controlled signal governs operations leaving the authorized limits indicates STOP.
- d) Within Interlocked Railway Crossings at Grade and Drawbridges
 - STOP before passing signal governing operation into the interlocking and be governed by Rule 607, whether or not signal indicates proceed.
 - In the application of Rules 609 (a) (ii) and 610 (a) (ii), the signalman must maintain the protection against conflicting movements

until the movement has reported clear of the interlocking limits.

- In the application of Rule 611, the crew member, after opening the switch, must wait five minutes, unless a greater period is specified in special instructions and posted in the box marked “switches”, before permitting the train to proceed, and must not close the switch until the movement has cleared the interlocking limits.
- e) Over Public Crossings at Grade
 - Over an unprotected public crossing at grade: A crew member must provide manual protection of the crossing unless the way is seen to be clear. Vehicular or pedestrian traffic must be given the right of way.
 - Over a public crossing at grade equipped with automatic warning devices: A crew member must provide manual protection of the crossing unless it is known that the warning devices have been operating for at least 20 seconds or that the gates (if any) are horizontal when the crossing is reached.
 - f) Over Power-Operated Switches, Dual Control Switches and Dual Control Switch Point Derails
 - Must approach such switches prepared to stop and observe the switch points to be lined for the authorized route.
 - Must not exceed 8 MPH over such switches and must not stand on switch points while the switch is in power position.
 - Switch must be lined by the RTC, except that in the operation of a:
 - Power-Operated Switch, the RTC may give permission to have the switch operated by a qualified employee. After the track unit has cleared the switch points, the RTC must be immediately advised.
 - Dual Control Switch or Dual Control Switch Point Derail, the RTC may give permission to operate the switch in the “hand” position. After the track unit has cleared the switch points, selector lever must be restored to “Power” position and locked and the RTC immediately advised.

1.6 Inspection of foreign owned rail inspection and maintenance equipment

Note: This instruction applies whether operating as a train or a track unit.

Before operating any foreign owned rail inspection or maintenance equipment equipped with air brakes such as Sperry, Speno, Loram, Harsco Track Technology, etc., CP conductor, foreman, operating foreman or operating officer must ensure the following requirements have been complied with:

- a) A copy of "Joint Inspection of Foreign Owned Rail Inspection and Maintenance Equipment" Form JI-001, must be on board the equipment and available to CP employees for inspection. (If Form JI-001 is not available, the equipment is to be held until joint inspection is performed by, or verified by, a QUALIFIED CP employee and a responsible employee of the foreign owned equipment).

The joint inspection shall be done in intervals not to exceed 90 days, and along with an inspection of the brakes, an inspection of the running gear shall be made. Such inspection will be at the expense of the contractor as well as any associated repairs required by MS that cannot otherwise be arranged by the contractor.

Equipment must pass inspection prior to being returned to service.

- b) The responsible employee on board the foreign owned equipment must be in possession of a current copy of General Operating Instructions (GOI).
- c) For locations where Certified Car Inspectors are not on duty, the proper air brake inspections and tests must be performed by the on board employees of the foreign owned equipment, in accordance with Section 13 of the General Operating Instructions.

1.7 Rail Grinders: Descending Certain Heavy and Mountain Grades

Production rail grinders (**RMS and RG series**) must adhere to the following when NOT actively grinding rail:

Note: This instruction applies whether operating as a train or a track unit.

- a) Do not exceed 10 MPH while descending the following grades:

Subdivision	Mileage		
Rossland	21.2	to	18.4
	8.2	to	9.2
Fording River	2.0	to	33.3
Byron Creek	4.2	to	11.6
Mountain	18.0	to	30.2
(Connaught Track)	68.4	to	87.8
(North and South Track)	90.3	to	104.6
Laggan	123.6	to	Field
Pecten	22.0	to	30.4
Bredenbury	0.0	to	2.6
Hamilton	60.3	to	67.0
Waterloo	7.0	to	8.0
	9.0	to	8.0
	6.2	to	4.6
Nephton	6.3	to	4.3
Windsor			
(Detroit River Tunnel)	111.5	to	113.2
	114.3	to	113.2

- b) Before descending these grades, a road manager must meet and then accompany the rail grinder to insure the contracted employees who are responsible for the operation of the rail grinder are operating safely and have performed the required daily tests.

2.0 Operation of Movements WITHOUT a Manned Caboose

2.1 The conductor on a movement without a manned caboose shall be stationed in the operating cab of the lead locomotive.

Note: Where seating will not accommodate all crew members in the leading unit, a trailing unit may be used to accommodate trainman or other employees required to ride.

A company officer or a Transport Canada Safety Inspector riding a movement will be accommodated in the lead unit.

When a road manager is evaluating a locomotive engineer trainee the locomotive engineer may be deployed to a trailing unit.

Under these circumstances, the road manager will assume the normal responsibilities of the locomotive engineer and the locomotive engineer will have his/her normal responsibilities relaxed to the extent they may be performed from the trailing unit.

2.2 Each working trainman and conductor on a movement without a manned caboose shall be provided with an operational portable two-way radio before leaving a crew change-off point.

2.3 Each Engineering Services BTMF crew, extra crew, signal crew, welding crew, Track Maintenance Supervisor, Assistant Track Maintenance Supervisor, operator, track patrol employee and other employees or group of employees, where assigned duties along the right of way where a movement without a manned caboose may be moving and where that passing movement can be observed, shall be provided with or have immediate access to an operational portable two-way radio capable of communicating with the crew of that passing movement.

3.0 Operation of Movements WITH a Manned Caboose and Reduced Crew

Note: The following instructions apply to movements that are operated with a manned caboose, and with a crew consisting of one conductor and one trainman.

3.1 General

a) If the rear crew member finds it necessary to vacate the caboose cupola for short periods of time, for essential reasons, while the movement is in motion, they must continue to watch for signals from employees along the track, when practicable, and must make running inspections of the movement and of the track to the rear at every reasonable opportunity.

3.2 Radio Requirements

- a) Movements will not leave a crew's home terminal with a reduced crew with less than four operating radios.
- b) Movements will not leave crew's away-from-home terminal with a reduced crew with less than three operating radios.
- c) While approaching every siding the locomotive engineer is responsible to ensure that radio communication is established with the rear crew member. Should there be a failure to secure an acknowledgement from the rear crew member, the movement must be stopped before passing the second consecutive siding and communication by radio, personal contact or hand signal established before proceeding.
- d) Should a radio fail en route, radios will be relocated, if necessary, to provide end-to-end communication. (A reasonable effort should be made to supply a replacement at the away-from-home terminal).
- e) Should a complete failure of the end-to-end radio system occur en route, the train may proceed, governed by the following:
 - Must not exceed 30 MPH.
 - Must exchange hand signals between front and rear of the movement at least once every 30 miles or prior to passing two consecutive sidings, whichever occurs first. This may require stopping the movement to exchange proceed hand signals.
- f) Failure of radio communication must be reported to the RTC at the first opportunity.

4.0 High Voltage Electrical Cables

- 4.1** Always assume that any downed overhead wires are carrying electricity, and that it has energized the ground, the track, and any nearby wayside equipment (snow melters, switches, bungalows, etc.).

Immediately notify the RTC or your immediate supervisor. Advise them that an overhead wire has fallen down on the track or right of way, whether the wire is obstructing the track or not, and provide as much detailed information about the situation as possible.

If the downed wires are contacting the rail, do not detrain within the track block that may be energized, if possible. If detrainment is absolutely required, follow the procedures in item 4.4.

- 4.2** Installation of buried electrical cables along railway right-of-way is a common practice. These underground systems are safer than similar high voltage systems on pole lines.

Power cables are normally buried at a depth of 3 to 5 feet below the surface and 4 to 6 feet from the end of the ties. Along bridges, trestles and in tunnels, the cables are installed in ducts and commonly have orange markers installed in the vicinity (not necessarily the exact location).

Fuses and protective breakers should automatically turn off the electricity in the area if cable is cut or electrical equipment damaged, however it should never be assumed that the cables are de-energized.

- 4.3** In the case of a derailment, when the equipment is known or suspected of being in the vicinity of the electrical power cables:

1	Contact the RTC immediately.
2	Stay clear of the area and keep others clear of the area.
3	Do not approach derailed equipment, because the underground cable or electrical equipment may be partially severed or damaged but still energized.

- 4.4** If locomotives or adjacent cars have derailed in the vicinity of electrical cables then remain on the equipment if possible. This is the safest location.

If the crew must dismount due to immediate danger, or because a train carries dangerous goods, the following procedure must be followed:

1	Dismount at a location along the train where it is safe to do so.
2	Jump clear of the train and land with your two feet together.
3	Do not to touch the equipment and the ground at the same time.
4	While keeping both feet in contact with the ground at the same time, shuffle away from the track and away from the wire.
5	Do not stop shuffling until you are at least 50 feet clear of the track and wire.

CAUTION: DO NOT approach or touch exposed cable or damaged electrical equipment until S & C personnel have confirmed, either directly or through the NMC, that the system has been de-energized and grounded.

General Operating Instructions (GOI)

Section 2

Reporting Requirements

TABLE OF CONTENTS

1.0	Initial Reporting Requirements	12
2.0	Protecting the Accident Scene	13
3.0	Injuries or Fatalities	15
4.0	Train/Vehicle and Trespasser Accidents.....	15
5.0	Environmental Incidents	16
6.0	Unsafe Signal Failures	17

1.0 Initial Reporting Requirements

1.1 All employees must immediately report any accident or incident of a type listed in Table 1: Reportable Accidents, or Table 2: Reportable Incidents, below.

If the conductor or other employee in charge of a train or other rail equipment is unable to make the report, any other CP employee who becomes aware of such occurrence must make the report.

Reporting procedures:

- Report to the RTC, Operations Manager - NMC, yard/terminal supervision, or immediate supervisor. NMC Emergency phone number is: 1-800-795-7851.
- Use voice communication or personal contact.
- Include a brief description of the occurrence.
- Include all of the information listed in item 1.5.
- Do not delay reporting if all information is not available.
- Request any required medical or other emergency assistance.

Table 1: Reportable Accidents	
A.	Collision or derailment of on-track equipment, including track units
B.	Fatality or injury from contact between on-track equipment and any person or vehicle
C.	Employee fatality or injury while on duty from any cause
D.	Grade crossing collision, including either public or private crossings
E.	Acts of sabotage or terrorism, including bomb threats, hijacking, blockade, hostage-taking
F.	Evacuation resulting from any on-track accident or incident
G.	Fire or explosion involving on-track equipment
H.	Explosive, radioactive or infectious that is lost, stolen, damaged, vandalized, or setoff
I.	Release of dangerous goods from any car, tank, container, cylinder or vehicle
J.	Unintended release of any non-regulated substance

Table 2: Reportable Incidents	
A.	Movement of a train, engine or track unit without proper operating authority
B.	Exceeding limits or unprotected overlap of operating authority
C.	Less restrictive signal indication than required for the intended movement
D.	Failure to provide proper protection for on-track personnel
E.	Uncontrolled movement of on-track equipment
F.	Over speed coupling of equipment containing DG (Ref. GOI Sec.8, Item 5.0)
G.	Failure to protect a hand operated main track switch
H.	Unprotected main track switch left in abnormal position
I.	Operation of equipment by unauthorized or unqualified person (Ref. GOI Sec.15, Item 1.4)
J.	Railway safety devices that have been tampered with
K.	On-track equipment being operated in excess of 10 mph over authorized speed
L.	Crew member who becomes incapacitated for any reason
M.	Livestock or wildlife killed or injured by on-track equipment
N.	Suspicious or dangerous activities on or near tracks or adjacent property
O.	Slides, washouts, or other on-track obstructions which may affect safe operations
P.	Damage or vandalism to equipment, signals, or structures which may create a safety hazard
Q.	Any person riding in locomotives or other non-passenger equipment, excluding assigned crew members
R.	Right of Way Fires
S.	Near miss incidents

1.2 The employee making the initial report must complete the appropriate accident report(s) (provided in the conductor's form package) as soon as possible after the occurrence and submit it to his/her immediate supervisor or the Service Area Manager - Field Operations.

1.3 Employees must immediately take whatever action may be required, and which can be performed safely, to protect the safety of persons, property, or the environment, including:

- track protection,
- injury assistance,
- fire control,
- evacuation,
- control of leaks or spills.

- 1.4** Employees are to remain at the scene of accidents until released by the RTC, their supervisor, or another person in charge at that location.
- 1.5** Initial accident/incident information should include, where applicable:
- date & time of occurrence;
 - train, engine, car, or track unit numbers involved;
 - compass direction of travel & estimated speed;
 - location by mileage and subdivision;
 - type of track (main, yard, siding, industry, etc.);
 - name or designation of other than main track;
 - name of railway or company operating the equipment;
 - name of railway or company who owns or maintains the track;
 - method of operation (manual, remote, beltpack, etc.);
 - emergency application type if applicable (crew, TIBS, UDE);
 - number of persons injured or killed;
 - identity of injured or killed (employee, third party, etc.)
 - description of any dangerous goods involved or released;
 - initial, number, and position of equipment involved;
 - description of any damage to equipment;
 - description of damage to any track, structure, or property;
 - brief description of the occurrence;
 - names, address, phone numbers of any witnesses;
 - names, employee number, and position of crew members;
 - name of person making the report.
- Do not delay reporting because some information is missing.

2.0 Protecting the Accident Scene

- 2.1** Employees have an obligation to protect any evidence relevant to a reportable accident, pending the Transportation Safety Board's (TSB) decision to investigate.
- Members of train crews and other employees who may be on the scene or are otherwise involved with an accident should note all relevant facts, so that they will be in a position to give information when the matter is investigated.
- In the event of an injury to any person, including employees, passengers, trespassers, and others, the names and addresses of potential witnesses in the immediate vicinity should be procured at once.
- Train crews or other employees should examine and report on the condition of the track, structures and equipment where the accident occurred. Time of the accident should be noted.
- 2.2** If the TSB decides to investigate:
- a) employees on the scene will be notified as soon as possible by the RTC or their supervisor, and
 - b) the TSB investigator must first communicate his/her arrival at the site to the person in charge, and
 - c) all evidence at the site must be protected until released by the TSB investigator, and
 - d) employees must ensure that there is as little interference with the site as possible, except that
 - emergency measures must be taken to protect safety of persons, property, or environment, and
 - before equipment or other pieces of evidence are moved, a record of the conditions must be taken by the person who directs, supervises, or arranges such action, including pictures, sketches, measurements, etc.

NOTE: If there is any doubt about what actions should be taken, communicate with the RTC, the TSB investigator, or other person in charge of the site.

2.3 TSB investigators can limit access to an accident site, even to railway employees. However, they must:

- a) identify themselves upon arrival, and
- b) notify the CP person in charge when the investigation is complete and all TSB staff are clear of the site, and
- c) minimize the disruption to transportation services.

TSB investigators have extensive powers to conduct their investigations and CP employees must cooperate fully with them.

Employees must not provide the TSB or other persons, except company officers, with any opinion, assumption, or impression as to the cause of an accident, including speeds, distances, etc.

2.4 Where an employee is served with a notice in writing by a TSB investigator, the employee must comply with the notice and give such evidence as the investigator requests. Where an employee is required by a Transport Canada Safety Inspector to attend for questioning, the employee must do so and must comply with any reasonable request. In either case, the employee must, upon receipt of the notice, advise his/her supervisor.

2.5 At the scene of an accident or incident, if requested to give a statement to any government authority, employees should:

- Verify the other person's identification before providing any information.
- Provide only the facts as you know them. Do not offer opinions, assumptions, or impressions.
- Contact your supervisor if you are uncertain whether to respond to requests for information or any particular line of questioning.
- Always advise your immediate supervisor or the RTC when you have provided information to outside authorities.

2.6 In all incidents, provide responding authorities with only the following information:

Your name, address, date of birth and profession
Train, lead locomotive and equipment numbers involved in incident
The number of cars in the train
The location and time of the accident
The direction the train or equipment was travelling.
The direction in which the vehicle or pedestrian was traveling, if observed.
The movement of vehicles or pedestrians prior to and at time of incident.
Whether the train was moving or stationary at the time of the accident
The location at which the train came to a stop
A description of the weather conditions and visibility at the time of the accident
Whether the headlight was lit, and the bell, horn, and ditch lights were activated
The location of each member of the crew at the time of the accident

NOTES:

Do **not** provide signed statements, unless required by a company officer.

Do **not** provide a drivers license, even if requested.

Do **not** give statements or information to anyone who does not have a legal right, such as the news media, attorneys, insurance representatives, etc.

Give statements only to legal authorities (TSB or Transport Canada investigators, Police, or Coroner).

3.0 Injuries or Fatalities

- 3.1** When an accident involving serious personal injury has occurred, the local police and any required medical support should be immediately summoned to the scene.
- 3.2** When a fatality has occurred due to any cause, crews must report the fact immediately to the RTC or their immediate supervisor. The RTC or Supervisor must notify the local police, CP Police, and a coroner, medical examiner, or other appropriate investigator, and if available, a Company approved medical examiner.
- 3.3** When injuries and fatalities involve the general public:
- Care should be taken not to disturb any wreckage more than is necessary to provide first aid or permit movement of the train.
 - If it is necessary to move a body, crews must consult with the RTC who will advise police as to their intention and reason.
 - A person must be left in charge to advise police, coroner, TSB investigator, or Transport Canada inspector of the original position in which the body was found.
 - When a train crew has been directed to remain stationary following any fatal accident, the crew will remain as long as necessary for the police or coroner to conduct their investigation.
 - To avoid train delays, arrangements may be made through the RTC for the police or coroner to take any required statements to be given on arrival at the next destination terminal in the presence of a railway operating officer.
- 3.4** When injuries and fatalities involve employees: Item 3.3 does not apply, instead Section 127 of the Canada Labour Code applies which provides that:
- “where an employee is killed or seriously injured in a work place, no person shall, unless authorized to do so by a safety officer, remove or in any way interfere with or disturb any wreckage, article, or thing related to the incident except to the extent necessary to:
- save a life, prevent injury, or relieve human suffering in the vicinity;
 - maintain an essential public service; or
 - prevent unnecessary damage to or loss of property.”

NOTE: For purposes of this item, “serious” injury includes an occurrence which creates a substantial risk of death or which causes serious permanent disfigurement or protracted loss or impairment of the function of any bodily member or organ.

- 3.5** A copy of the Canadian Rail Incident Investigation Guideline is supplied in the conductor’s form package and is to be provided to any police officer responding to incidents involving injuries or fatalities.

4.0 Train/Vehicle and Trespasser Accidents

- 4.1** When an accident occurs that involves a vehicle or a pedestrian (at grade crossing or otherwise), the following facts should, when applicable, be immediately drawn to the attention of the driver, occupants, outside witnesses, and/or other employees:
- the engine bell is ringing;
 - the headlight is illuminated;
 - the ditch lights are illuminated;
 - the oscillating headlight, if equipped, is functioning;
 - crossing warning devices including lights, bells, and gates are functioning, where equipped.
- 4.2** In addition to the information required in item 1.5, the following information should be recorded:
- was the whistle sounded while approaching the crossing?
 - was the bell ringing while approaching the crossing?
 - type of crossing warning device and if activated;
 - whether or not the crossing is equipped with gates;
 - direction and movement prior to impact of vehicle;
 - distance beyond crossing where the head end of train stopped;
 - point of impact on train and/or vehicle
 - damage to vehicle;
 - position of vehicle after mishap;
 - whether vehicle headlights were on;
 - whether the vehicle’s windows were clear, dirty, open, closed, steamed, or frosted;

- whether the vehicle's radio or stereo was on or off, and approximate volume;
- make, type, and license number of the vehicle;
- name, address, sex and age of vehicle owner, driver, and occupants;
- position of each occupant in vehicle;
- was each occupant wearing properly buckled seat belts?
- identification of any casualties;
- any evidence of intoxicants;
- description of any skid marks on the roadway;
- weather and road conditions;
- possible restrictions to vehicle visibility;
- restrictions to train visibility;
- any restrictions to visibility along sightlines for the train and/or the vehicle;
- names, addresses, phone # number of witnesses;
- name and address of attending coroner and/or investigator.

4.3 In addition to the requirements in items 4.1 and 4.2, where an accident involves a pedestrian, the following information should be recorded:

- Did the pedestrian appear to be aware of the approaching train, and at what distance prior to contact?
- Describe any actions or behaviour that suggested the pedestrian was aware of the approaching train.
- Did the pedestrian attempt to avoid the accident?
- Did the pedestrian appear distracted by other events?
- Was the pedestrian wearing clothing or a headset that may have impaired hearing?
- Describe any actions or behaviour which may suggest that the pedestrian was aware of the train but deliberately declined to take evasive action.

4.4 In addition to the requirements in items 4.1, 4.2, and 4.3, where an accident involving a pedestrian or trespasser occurs at a location other than a crossing, the following information should also be recorded:

- Is the right of way fenced at this location on one or both sides?
- Is there an obvious reason for trespassing in this area, such as a school or shopping area with no crossing nearby?

5.0 Environmental Incidents

5.1 An environmental incident includes the accidental or unintended release of any dangerous or non-dangerous substance into the natural environment, including land, water, or air.

Immediate reporting to the NMC is required for all environmental incidents.

In addition to the information required in item 1.5, the following should be reported:

- description of the location and the surrounding environment, such as near water, near wetlands, near a drainage or sewer system, in a park, nature reserve, or other possibly sensitive area.
- type and estimate of the quantity of the substance released
- details of any immediate action taken, or proposed to be taken, to control the release.

5.2 Livestock and wildlife that are killed or injured by on track equipment must also be reported. Wildlife, for reporting purposes, would include most large species (elk, moose, bears, wolves, coyotes, cougars, etc.), and also any threatened or endangered species, such as eagles. If in doubt as to the species or the reporting requirement, make the report.

In addition to the information required in item 1.5, the following should be reported:

- species of animal if known;
- behaviour of animal at the time of collision (standing, running, lying down, etc.);
- weather conditions;
- estimated snow depth, if applicable;
- estimated speed of train;
- line of sight (straight or curved track and/or obstructions);
- any measures taken to avoid collision (horn, bell, lights turned on or dimmed, braking, etc.).

5.3 Fires along a railway right of way may also have a negative impact to the environment and must be reported.

In addition to the information required in item 1.5, the following should be reported:

- description of fire & whether found or set by that train.
- any measures taken to control or extinguish the fire.

6.0 Unsafe Signal Failures

- 6.1** When a block or interlocking signal displays a more permissive indication than circumstances warrant or an indication is not as specified by CROR Rules 405 to 439 or a System Special Instruction, the train crew must:

STEP	ACTION
1	Stop immediately or if stopped do not move.
2	Transmit an emergency communication per CROR Rule 125(a).
3	Immediately advise the RTC of the signal number, location signal colours, and respective positions.
4	Report the positions of switches and any other pertinent information.
5	Confirm signal colours with another crew member or other employees in the vicinity.
6	Be governed by instructions received from the RTC.

General Operating Instructions (GOI)

Section 3

Regulatory Requirements

TABLE OF CONTENTS

1.0	Railway Safety Act (RSA).....	20
2.0	Medical Requirements.....	21
3.0	Work/Rest Rules for Railway Operating Employees.....	22
4.0	Transportation Safety Board (TSB) Act.....	22
5.0	Connivance in Illegal Transportation By Railway Employees.....	23
6.0	Laws Governing Wildlife.....	23
7.0	General Legal Requirements.....	23

Regulatory Requirements

RAILWAY SAFETY ACT (RSA),
TRANSPORTATION SAFETY BOARD (TSB) ACT,
AND CRIMINAL CODE

1.0 Railway Safety Act (RSA)

Note: Railway Equipment as used in the Railway Safety Act includes “Equipment” and “Track Units” as defined in the CROR.

- 1.1** Under Sections 27 and 28, of the Railway Safety Act, Transport Canada has appointed a number of “Railway Safety Inspectors.” Each inspector has an identification certificate, which will also state the inspector’s area(s) of competence.

Upon presentation of this certificate, Railway Safety Inspectors may (within the inspector’s area of competence) enter any “railway work or railway equipment”, whether or not in operation, to inspect such railway work or railway equipment.

An Inspector may forbid or restrict the use of a line of railway or rolling stock or an operating practice if he considers that such use or practice poses an immediate threat to safe railway operations.

Employees must give the Inspector all reasonable assistance in the course of the inspection and must comply with all reasonable requests; it is an offence not to.

- 1.2** The Railway Safety Act provides that a contravention of the Act or any Regulations, Emergency Directives, Orders or Rules made or approved under the Act, is an offence.

Where there is a contravention of the Act, an individual is liable to a fine of up to \$10,000 or imprisonment for a term not exceeding one year, or both.

In the case of contravention of a Regulation, Emergency Directive, Order of the Minister, Order of a Railway Safety Inspector, or Rule approved by the Minister, an individual is liable to a fine of up to \$5,000 or imprisonment for up to six months, or both.

In certain circumstances, where a contravention occurs on more than one day, or is continued for more than one day, a person will be deemed to have committed a separate offence for each day on which the contravention occurs or is continued.

1.3 Criminal Code as amended by Railway Safety Act

The criminal code has been amended to make it an offence for anyone to;

- operate railway equipment in a manner which is dangerous to the public;
- knowingly send for operation or operate railway equipment which is not fit and safe for operation;
- operate or assist in the operation of railway equipment while impaired by alcohol or drugs;
- operate or assist in the operation of railway equipment with a blood/alcohol level exceeding 80 milligrams of alcohol per 100 milliliters of blood.

The breathalyzer sections of the Criminal Code apply to persons operating or assisting in the operation of railway equipment. The Court which sentences an offender for impaired operation may, and in certain circumstances must, make an order prohibiting the offender from operating railway equipment for a period of up to three years.

A police officer, or other peace officer, may require a person to provide a breath sample or to accompany him for the purpose of enabling a breath sample to be taken where the police officer reasonably suspects that a person operating or assisting in the operation of railway equipment has alcohol in his body. Every one commits an offence who, without reasonable excuse, fails or refuses to comply with the police officer’s demand in this regard. The penalties for such an offence range from a \$300 fine to 5 years imprisonment, depending on the situation.

Notes:

- a) The above does not relieve the employee of his obligation under CROR General Rule G and any related Special Instruction as required in connection with the use of alcohol or drugs
- b) When an employee is required to leave his train or railway equipment to provide a breath sample, the appropriate Company authority must first be notified, so that adequate protection, or movement, of the train or railway equipment may be arranged.

2.0 Medical Requirements

2.1 Safety Critical Positions

Under the Railway Safety Act employees who occupy Safety Critical Positions must receive a medical assessment at least every 5 years up to the age of 40 and at least every 3 years thereafter.

These medical assessments include a medical report to be completed by the employee's physician and include hearing and vision tests.

CP's Occupational Health Services will send letters to employees occupying Safety Critical Positions advising them when medical assessments are required.

Safety Critical employees are required to advise treating physicians and optometrists that they hold such a position prior to any examination.

2.2 Safety Sensitive Positions

Occupational Health Services Fitness to Work Medical Policy identifies Safety Sensitive Positions for whom hearing and vision tests are required.

Employees occupying Safety Sensitive Positions will be advised when hearing and vision tests are required.

2.3 Medical Records

All related medical records will remain confidential between you, your physician and Occupational Health Services. Supervisors will not have access to medical records. They will only receive a notification from Occupational Health Services that you are fit, fit with restrictions or conditions, or unfit for service.

Please refer to the following lists to determine whether you may be working in a Safety Critical or Safety Sensitive position.

Copies of the Fitness to Work Policy and detailed lists of Safety Critical and Safety Sensitive positions are available on RailCity under: Teams > Human Resources > Occupational Health Services > Policies & Procedures.

Any medical questions should be directed to Occupational Health Services at 1-866-876-0879.

SAFETY CRITICAL POSITIONS

Any employee or contractor, union or non-union, who is required to perform any of the following functions, will be considered to occupy a Safety Critical Position.

1. Locomotive Engineer
2. Conductor
3. Brakeperson
4. Yard Foreman
5. Yard Helper
6. Yard Service Employee
7. Yard Service Helper
8. Utility Yard Employee
9. Rail Traffic Controller
10. Interlocking Rail Traffic Controller

SAFETY SENSITIVE POSITIONS

Any employee, union or non-union, who is required to perform any of the following functions, will be considered to occupy a Safety Sensitive Position.

1. Track foreman, track supervisor and any other person who takes a track occupancy authorization.
2. S&C Maintainer, S&C Technician and any other person who maintains, repairs or installs signal systems.
3. Snow plow operator
4. Engine attendant and engine attendant helper
5. Trackmobile operator and trackmobile helper
6. Intermodal toplift operator
7. Auxiliary, mobile & shop crane operator (if rated over 60 tons)
8. Dangerous goods emergency responder
9. Railway police officer
10. Yardmaster

2.4 Glasses and Contact Lenses

Any employee who is required by their physician or by Occupational Health Services to wear glasses or contact lenses shall wear them while on duty and shall carry a second pair or replacement while on duty.

3.0 Work/Rest Rules for Railway Operating Employees

Copies of Work/Rest Rule(s) will be available locally on bulletin boards and hardcopy. In addition, these rules will be available on RailCity under: Teams > Operations > Safety & Environmental Services, and on Transport Canada's website.

4.0 Transportation Safety Board (TSB) Act**4.1 TSB Investigators may;**

- limit access to the site or location relevant to their investigation, but should minimize any disruption to transportation services;
- enter and search any place relevant to the investigation with the consent of the person in charge. (The TSB investigator does not need such consent if he has a warrant. However, in exceptional circumstances where delay to obtain a warrant would threaten human life or safety or destruction of evidence, the investigator may exercise these powers without a warrant.)
- seize and test evidence, but must take reasonable steps to allow the owner of the evidence to be present during the testing.
Such evidence must be returned to the owner as soon as possible, e.g. following the test.
- by written notice: demand documents, the release of medical records or the performance of an autopsy, or compel a person to give evidence or take a medical examination.

4.2 Role of Railway Officers

- a) Railway officers must cooperate with TSB Investigators, but they still have a duty to respond to an occurrence to protect the safety of the public, employees and property and to determine the cause of the occurrence and start clean up operations

- b) When contacted or approached by a TSB Investigator, railway officers should
 - ask what equipment or information the TSB Investigator is examining;
 - when statements are required, arrange a convenient time, to minimize disruption to service;
 - when company documents are required, ensure their confidentiality before release. Maintain copies of documents if necessary to release the originals to TSB.

4.3 Observer Status Required

- a) Railway officers with a direct interest in a TSB investigation must request observer status from the TSB. (Railway officers do not automatically enjoy observer status and therefore must request it at the beginning of an investigation.)
- b) Observers may attend the scene of an accident or incident, examine documents, etc. However, unless specifically authorized by the TSB, they can not attend an interview of a witness during an investigation

5.0 Connivance in Illegal Transportation By Railway Employees

5.1 Section 401 of The Criminal Code RSC 1985, c. C-46 reads:

“(1) Everyone who, by means of a false or misleading representation, knowingly obtains or attempts to obtain the carriage of anything by any person into a country, province, district or other place, whether or not within Canada, where the importation or transportation of it is, in the circumstances of the case, unlawful is guilty of an offence punishable on summary conviction.

(2) Where a person is convicted of an offence under subsection (1), anything by means of or in relation to which the offence was committed, upon such conviction, in addition to any punishment that is imposed, is forfeited to Her Majesty and shall be disposed of as the Court may direct.”

5.2 Your attention is also directed to Sections 159 and 160 of the Customs Act of Canada, reading as follows:

a) Section 159 reads;

“Every person commits an offence who smuggles or attempts to smuggle into Canada, whether clandestinely or not, any goods subject to duties, or any goods the importation of which is prohibited, controlled or regulated by or pursuant to this or any other Act of Parliament”

b) Section 160 reads in part;

“Every person who contravenes or commits an offence under section 159.

- is guilty of an offence punishable on summary conviction and is liable to a fine of not more than two thousand dollars and not less than two hundred dollars or to imprisonment for a term not exceeding six months or to both fine and imprisonment; OR
- is guilty of an indictable offence and is liable to a fine of not more than twenty-five thousand dollars and not less than two hundred dollars or to imprisonment for a term not exceeding five years or to both fine and imprisonment.”

5.3 This is submitted for your information and guidance and you will note that the consent, connivance, aid or assistance of any railway employee in illegal transportation constitutes an offence for which a prison term is a

penalty. All employees must use their best efforts to prevent violation of the law and every facility should be given officers of the Government in their investigations.

5.4 If an employee has reason to believe that a shipment is falsely billed and contains contraband, although classified as some other commodity, he must immediately inform CP Police and the Service Area Manager - Field Operations, giving full particulars, including car number.

Note: CP Police # 1 800 716-9132

6.0 Laws Governing Wildlife

6.1 Under various Provincial laws and those governing National Parks, all wildlife are the property of the Crown. It is illegal for any person to remove or to be in the possession of wildlife or wildlife parts without proper authorization documents.

Do not remove any animal carcass from the right-of-way. However, if it is necessary for safety reasons, an animal carcass may be moved up to 15 feet off the grade.

Refer to Section 2, Item 5.2, for the reporting procedures when wildlife are injured or killed as a result of coming in contact with railway equipment.

Refer to Section 2, Item 5.1, for reporting leaking grain cars or grain spills observed on the right of way.

7.0 General Legal Requirements

7.1 Employees are required, at all times, to comply with all laws of the nation in which they are required to travel, including, but not limited to, laws pertaining to customs and excise duties, immigration, the control of illegal substances and all criminal laws.

7.2 Employees must not bring any goods that are subject to any form of import duty across international borders.

7.3 The Criminal Code of Canada prohibits the impaired operation of railway equipment. If convicted, in addition to other fines and/or prison sentences, a person can be prohibited from operating railway equipment for a period of up to 5 years.

General Operating Instructions (GOI)

Section 4

Radio Procedures

TABLE OF CONTENTS

RADIO PROCEDURES

1.0 General.....	26
2.0 Operation of Locomotive Radio Units	26
3.0 Operation of Portable Radios.....	26
4.0 Transmitting Technique.....	26
5.0 Calling Procedures	27
6.0 Emergency Communication Procedures.....	27
7.0 CROR Rule 123.2	27
8.0 Procedure for Changing Radio Channels	28
9.0 CROR Rule 119	28

RAILWAY EMPLOYEE COMMUNICATION RULE

1.0 Scope	29
2.0 Definitions.....	29
3.0 Emergency Radio Transmissions	29
4.0 Radio Communication	29
Spectra Railroad Radio Operating Instructions.....	30
GE Railroad Radio Operating Instructions	31
AAR To CP Radio Channel Cross Reference.....	32

RADIO PROCEDURES

INSTRUCTIONS IN THE USE OF RAILWAY RADIO COMMUNICATIONS SYSTEMS

1.0 General

- 1.1** A railway radio communication system is one employing radio for the transmission of information between moving equipment/track units, between moving equipment/track units and a fixed point, between fixed points, and/or between employees provided with portable radios.
- 1.2** These instructions comply with current Transport Canada Railway Employee Radio Communication Rule and do not modify or supersede any rule in Canadian Rail Operating Rules or Special Instructions.
- 1.3** Only authorized radio equipment may be used. Citizen band radios must not be used to direct train or engine movements, or the operation of track units.
- 1.4** Only authorized technicians are permitted to make technical adjustments to radio equipment.
- 1.5** No employee shall transmit any unnecessary, irrelevant or unidentified communication, nor utter any obscene, indecent or profane language via radio.
- 1.6** Employees must not transmit or cause to be transmitted any false or fraudulent distress signal, call or message, or knowingly interfere with or obstruct any radio communication.
- 1.7** When there is a possibility of misunderstanding in areas of different time zones, then the time zone should be given after the time.
- Example:**
0045 PST: *Nought nought forty-five,
Pacific Standard Time*
- 1.8** Time table station columns will indicate:
- the channel to use to contact the Rail Traffic Controller or other parties;
 - the channel to stand by on for two way conversations; and
 - the channel to use in case of emergency.
- Procedures to follow in case of emergency will be found in time tables or special instructions.

2.0 Operation of Locomotive Radio Units

- 2.1** The radio must be properly adjusted so that calls may be received by all occupants in the cab until the trip is completed.

3.0 Operation of Portable Radios

- 3.1** When a rechargeable type battery is used, every effort should be made to begin each tour of duty with a fully charged battery. Employees must not tamper with, add, or use unauthorized batteries in radios.
- 3.2** To optimize portable radio reception, rotate the volume control to a point halfway between the low and high volume setting then rotate the squelch control (if so equipped) until a rushing noise is heard, then back off this control until the noise just ceases.

Note: Adjusting the volume and squelch controls on the radio will enable the receiving person to receive a clearer and stronger voice signal, but these controls do not in any way affect transmitting or sending power. Once a radio conversation begins, further adjustment to the volume and squelch controls will only enable the receiving person to adjust the incoming volume to the desired audio level.

4.0 Transmitting Technique

- 4.1** The efficient use of a radio depends on the speech and articulation of the sender. Speak all words plainly in a clear, distinct tone to prevent the running together of consecutive words. **DO NOT SHOUT.** Avoid any tendency to accent syllables artificially, or talk too rapidly. Speak slowly and clearly.
- 4.2** The following points should be kept in mind when using a radio:
- POSITION OF MICROPHONE:** Microphone should be angled at approximately 45 degrees, not more than 2 to 3 inches from the mouth of the sender.
- SPEED:** Keep the rate constant, neither too fast nor too slow. Remember in many cases the person receiving your message has to write it down.
- PITCH:** Remember, that high pitched voices transmit better than low pitched ones.
- RHYTHM:** Preserve the rhythm of ordinary conversation. To separate words so that they do not run together, avoid the introduction of sound that does not belong such as “er” and “um.” Attempt to maintain the pitch and rhythm of voice to the end of each sentence.

5.0 Calling Procedures

5.1 In the application of Rule 121 Positive Identification,

Trains and transfers will be identified as per the provisions of SSI to Rule 134(a), item 2 (e.g. 6032 East; plow 6032 East, etc.).

Exception: Trains and transfers may be identified by their train schedule identification including date or sequence (e.g. 402-10, 612-007, etc.) when communicating with yard or terminal personnel (TYC, MYPM, etc.), or with the RTC for reasons other than the issuance of authorities.

Engines will be identified by their engine number.

5.2 The following are proper examples when a radio communication is initiated.

Example of RTC calling a train on main track:

Initiating	Responding
"CP 6032 East, this is RTC (Calgary), OVER."	"CP RTC (Calgary), this is Engr 6032 East."

This example may be used when communicating with other personnel

"CP train 505-10, this is TYC Alyth, OVER."	"CP TYC Alyth, this is Engr train 505-10."
---	--

Example of a train on the main track calling a foreman:

"CP Foreman Brown, this is Engr 5550 East, OVER."	"CP Engr 5550 East, this is Foreman Brown."
---	---

Example of an RTC calling a CN train on main track:

"CN 4035 East, this is CP RTC (Thompson Sub), OVER."	"CP RTC (Thompson Sub), this is Engr CN 4035 East."
--	---

Example of a CN train on the main track calling a foreman:

"CP Foreman Brown, this is Engr CN 4035 East, OVER."	"Engr CN 4035 East, this is CP Foreman Brown."
--	--

5.3 Except as prescribed by CROR Rule 123, instructions and messages received by radio must be acknowledged or repeated to the sender by the person receiving them. If necessary, the receiving person shall request the sender to repeat or clarify the transmission. An acknowledgement of receipt must not be given until the receiving person is certain that

the transmitted message or information has been completely and correctly received and understood.

5.4 A radio conversation must always be ended by both the receiving person and the sender transmitting his/her own name or identification, followed by the word "OUT".

Example:

"Foreman Paul Mercier...OUT."

"Locomotive engineer 5550 West...OUT."

6.0 Emergency Communication Procedures

6.1 An emergency call and distress message shall be repeated at intervals until an answer is received. The intervals between repetitions of an emergency call and distress message shall be sufficiently long to allow time for employees who have received the message to reply.

6.2 Should it not be possible to initiate an emergency call on the channel designated by Special Instructions, any available channel should be used.

6.3 The RTC may designate another channel for emergency communication after an initial emergency call has been made on the designated channel.

7.0 CROR Rule 123.2

7.1 In the application of CROR Rule 123.2, the following is an acceptable example, after positive identification has been established:

Conductor	Locomotive Engineer
"Engine 5550 move backward five car lengths."	"Engine 5550 move backward five car lengths."
"Engine 5550, three cars."	"Engine 5550, three cars."
"Two cars."	"Two cars."
"One car."	Need not repeat when less than 2 cars ...
"Half a car... 20 feet... 10 feet... etc."	

7.2 In the event of failure of radio equipment, or when radio communication cannot be maintained during switching operations, the movement must be stopped and no further movement made until radio communication is restored or arrangements are made to use hand signals in lieu of radio.

8.0 Procedure for Changing Radio Channels

- 8.1** Except as provided in item 8.2, when required to change radio channels during a tour of duty, each crew member must be advised of the intention to change and all crew members must change channels simultaneously.
- 8.2** At locations where time table indicates a radio channel change, radios should be switched to the next frequency progressively.
Prior to entering a new territory;
- switch channel on the first radio sufficiently in advance;
 - progressively, bring all radios to the next frequency;
 - to ensure continuous monitoring, the last radio should be changed when the entire train is in the new standby channel territory.
- 8.3** As soon as possible after changing to the new channel, each radio must be tested to ensure all radios have been changed to the correct channel.

9.0 CROR Rule 119

In the application of CROR Rule 119, when travelling on a main track, all movements must have at least one radio set to monitor the appropriate train standby channel as indicated in time table station column footnotes.

When switching on the main track, if using another channel to perform switching, at least one radio, when practicable, should be set to the standby channel to receive EMERGENCY communications.

RAILWAY EMPLOYEE RADIO COMMUNICATION RULE

1.0 Scope

- 1.1 This rule shall apply to railway employees required by their railway company to transmit and receive radio communications.
- 1.2 It shall be the responsibility of the railway company and its employees to comply with the terms of this rule.
- 1.3 The railway company shall provide instruction so that its employees use of radio communications conforms with the terms of this rule.
- 1.4 The railway company shall ensure it identifies for the employee the radio channels the employee is to use, including channels to be used in case of emergency.
- 1.5 Except in cases of emergency, all radio transmissions shall be restricted to matters pertaining to railway operations.

2.0 Definitions

In this rule:

- 2.1 "Channel" means the radio frequency designated by the railway company for the purpose of voice communications.
- 2.2 "Designation" means the clearance designation or the train, engine or track unit number.
- 2.3 "Employee" means an employee of a railway company who is required to use radio communication devices in connection with railway activities.
- 2.4 "Radio Communication" means a series of voice transmissions made utilizing radio communication devices.

3.0 Emergency Radio Transmissions

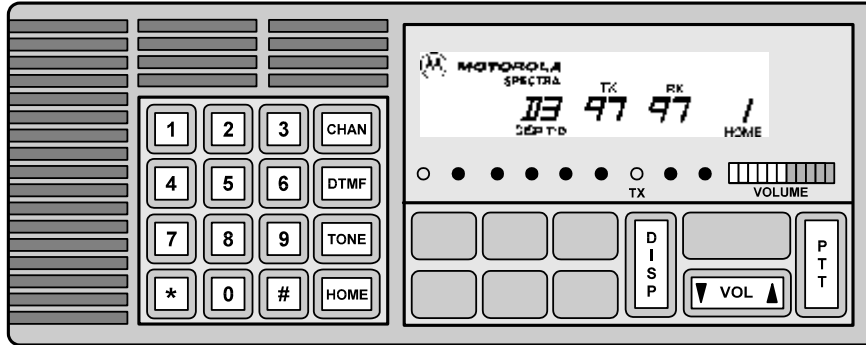
- 3.1 Emergency radio transmissions shall have priority over all other transmission.
- 3.2 Emergency radio transmissions shall be initiated by repeating the word "emergency" three times.

- 3.3 The employee initiating an emergency call shall in addition to requirements stated in Section 4.0, also state the nature of the emergency, the location and identify the assistance required.
- 3.4 Employees shall ensure they do not interfere with emergency radio transmissions.

4.0 Radio Communication

- 4.1 Radio communication shall be made clearly and concisely and in accordance with the following requirements;
 - a) numbers may be pronounced in full or their digits may be stated separately.
 - b) a decimal point shall be indicated by the word "point."
 - c) the twenty-four hour system shall be used for expressing time.
- 4.2 Except in the case of an emergency, employees shall not initiate a radio transmission on a channel that is known to be in use.
- 4.3 When a radio communication is initiated, the employee shall:
 - a) state the railway;
 - b) state the name or occupation of the person being called and/or, if applicable, the designation of the train, engine or track unit being called;
 - c) identify himself/herself, and, if applicable, the train, engine or track unit designation; and
 - d) end the initial call with the spoken word "OVER."
- 4.4 Where an employee responds to an initial call, he/she shall provide the name of the railway, his/her name and/or occupation and if applicable, the train, engine or track unit designation.
- 4.5 Each party to a radio communication shall end their final transmission with the spoken word "OUT."

Spectra Railroad Radio Operating Instructions



Keypad

With no mode selected, pressing the keypad buttons will transmit DTMF tones. When a mode is selected, the keypad is used to enter AAR & home channels, tone and DTMF digits.



Volume up/down

Press to adjust receive volume.



Channel mode

Use to select channel when using AAR channel number. Press once, then select four digit number. e.g. 95 91



Home mode

Use to select home channels 01 to 22 only. Press once, select two digit CP channel number. Include leading zeros for channels 01 to 09.



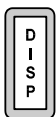
DTMF mode

Press once, then select one digit designated for call-in to RTC or DISP. Not currently used on CP Canada. Used in some locations in U.S.A.



Tone mode*

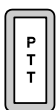
Use to call RTC when specified in time table. Press once, enter tone digit designated for RTC or DISP call-in. Not currently used on CP Canada. Use in some locations to call CN RTC, also used in U.S.A.



DISP Key

In home mode, unless otherwise provided by subdivision footnote, the "DISP" key automatically switches the radio to the RTC call-in channel. Use of this key eliminates the need to change channels when calling the RTC. Press "DISP" once, follow the procedures for calling the RTC in "Special Instructions," press "DISP" again to return to standby channel.

Where subdivision footnote states "DISP feature does not apply," the RTC call-in channel must be selected by first pressing the "HOME" or "CHAN" key and then entering the CP or AAR channel number.



PTT Key

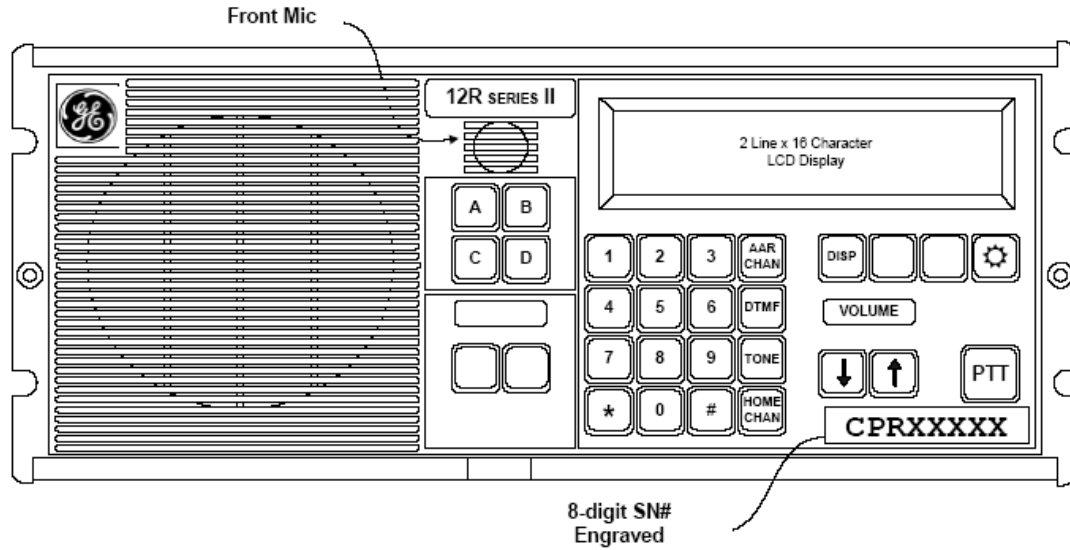
If handset fails, press and talk into the front microphone located in the speaker grill.

See time table for additional instructions.

* **Note:** CN tone T1 is CP tone T3, CN tone T2 is CP tone T6.

GE Railroad Radio Operating Instructions

Front Panel Operation



KEY	FUNCTION
LCD DISPLAY	Displays Channel & Group Names as well as operator prompts and status messages.
Front Panel Mic	Used when the Front Panel PTT switch is depressed to make a transmission.
Volume Up/Dn	Adjust level of audio heard over the speaker.
Numeric Keypad	Generate manual DTMF call tones. Select Dispatch Single Frequency Tone after "TONE" button. Select radio channel after AAR CHAN" or "HOME CHAN" buttons.
AAR Chan	Used to enable selection of radio channel from AAR Channel Group
Home Chan	Used to enable selection of radio channel from CP Home Channel Group
PTT	Used to make a radio transmission using the Front Panel Microphone.
DIM (sun Icon)	Alters intensity of backlit keypads and LCD for night/day viewing.
DTMF	Disabled.
TONE	Used to allow selection of Single Call Tone Frequency with numeric keypad. Tone will be automatically transmitted when a valid tone frequency is selected.
A, B, C,D	Disabled
DISP	Toggles between current channel and Dispatcher CALL-IN Channel (revert) if one is assigned to the channel selected.
Customer Name	Customer name & tracking No., engraved on front bezel as shown.

4

AAR TO CP RADIO CHANNEL CROSS REFERENCE

COMMONLY USED CHANNELS IN CANADA

AAR CHANNEL NUMBER		SPECTRA RADIO HOME CHANNEL	CP CHANNEL NUMBER	CHANNEL NAME
TX	RX			
91	91	01	CP1	TRAIN STANDBY
95	91	02	CP2	RTC CALL IN
21	91	03	CP3	RTC CALL IN
67	67	04	CP4	TRAIN STANDBY
81	81	05	CP5	TRAIN STANDBY
21	81	06	CP6	RTC CALL IN
95	95	07	CP7	TRAIN STANDBY
21	95	08	CP8	RTC CALL IN
21	67	09	CP9	RTC CALL IN
21	41	10	CP10	RTC CALL IN
49	49	11	CP11	MAINTENANCE OF WAY
15	49	12	CP12	UTILITY REPEATER
71	71	13	CP13	MAINTENANCE OF WAY
15	71	14	CP14	UTILITY REPEATER
09	49	15	CP15	UTILITY REPEATER
77	77	16	CP16	MAINTENANCE OF WAY
09	77	17	CP17	UTILITY REPEATER
35	71	18	CP18	UTILITY REPEATER
93	93	19	CP19	MAINTENANCE OF WAY
35	93	20	CP20	UTILITY REPEATER
33	77	21	CP21	UTILITY REPEATER
33	93	22	CP22	UTILITY REPEATER
09	93		CP23	UTILITY REPEATER
21	66		CP25	RTC CALL IN
47	47		CP82	TRAIN STANDBY
51	51		CP83	TRAIN STANDBY
98	98		CP197	MAINTENANCE OF WAY
66	66		CP92	TRAIN STANDBY
69	51		CP145	UTILITY REPEATER
11	11		CP59	SOUTHERN RLY BC
39	39		CP77	BC RAIL
41	41		CP78	TRAIN STANDBY
87	87		CP101	CN 1
73	73		CP95	CN 2
55	55		CP85	CN 3
37	37		CP76	CN 4
17	17		CP63	CN 5
79	25		CP157	CN 6
63	02		CP201	CN 7
61	61		CP88	CN 8

General Operating Instructions (GOI)

Section 5

Train Inspections
Hot Box Detector and WILD Instructions

TABLE OF CONTENTS

TRAIN INSPECTIONS 34

1.0 Inspecting SPECIAL Dangerous Commodities 34

2.0 Use of Portable Radios when Making Train Inspection 34

3.0 Mechanical Safety Inspections 34

4.0 Pre-Departure Inspection Procedures (by other than a certified car inspector) 34

5.0 Train Inspection Intervals 35

6.0 Locomotive Engineers Inspecting Passing Trains..... 35

7.0 Crew Change Pull-by Inspections 35

8.0 Pull-by Inspection Procedure..... 36

9.0 Inspection When Equipment is Stopped on a Bridge..... 37

10.0 Defect Suspected - IMPORTANT 37

11.0 Overheated Bearings..... 37

12.0 Overheated, Hot, Skidded, and Shelled Wheel Defects 38

13.0 Sticking Brakes..... 40

14.0 Cutting Out Car Air Brakes 40

15.0 Inspection Required Following an Emergency Brake Application While Moving 40

16.0 Reporting Detention or Defects 41

17.0 Crew to Crew Form 41

HOT BOX DETECTOR and WILD INSTRUCTIONS 42

18.0 General 42

19.0 Hot Box Detectors (HBD) Description 42

20.0 HBD Talker Description 43

21.0 Procedures – Approaching and Passing Over HBDs..... 45

22.0 HBD Alarms and Procedures Summary 46

23.0 Alarm Procedures 47

24.0 Procedures for Locating Defects 49

25.0 Incorrect Axle Count..... 50

26.0 No Defect Found - Hot Box 50

27.0 SPECIAL Dangerous at Double Asterisk (**) HBD – Mandatory Inspection 50

28.0 Reporting Defective HBDs..... 51

29.0 Hot and Cold Weather Temperature Speed Zones..... 51

30.0 Steam Locomotive CP 2816..... 51

31.0 Wheel Impact Load Detectors (WILD)..... 51

TRAIN INSPECTIONS

1.0 Inspecting SPECIAL Dangerous Commodities

- 1.1 A train or transfer carrying one or more full carloads, containerloads or trailerloads of SPECIAL dangerous commodities MUST, within one mile of the mileage shown by subdivision footnote at which this instruction applies,
- perform a pull-by or a standing inspection,
 - from the front of the train to and including 8 axles behind the last full carload, containerload, or trailerload of a SPECIAL dangerous commodity.

2.0 Use of Portable Radios when Making Train Inspection

When portable radios are available they must be carried by crew members when making train inspections.

3.0 Mechanical Safety Inspections

- 3.1 Mechanical Safety Inspections will be performed by Certified Car Inspectors at those locations designated for that train, as specified in the Train Service Schedule CM422A.

At locations other than designated Safety Inspection Locations, where trains originate or cars are added to a train, the train crew or other qualified person must make a Pre-departure Inspection for those conditions listed in item 4.1.

3.2 Cars Lifted at Other than Safety Inspection Locations

The CST must arrange to notify Mechanical Services when trains lift cars at other than designated Safety Inspection Locations.

4.0 Pre-Departure Inspection Procedures (by other than a certified car inspector)

4.1 Hazardous Conditions

At each location where a freight car is placed in a train and a Certified Car Inspector is not on duty for the purpose of inspecting freight cars, the freight car must, as a minimum requirement, be inspected for these hazardous conditions:

- Car body leaning or listing to the side,
- Car body sagging downward,
- Car body positioned improperly on the truck,
- Object dragging below the car body,
- Object extending from the side of the car body,
- Plug door open or any door out of guide,
- Broken or missing safety appliance (e.g. handhold, ladder, sill step),
- Insecure coupling,
- Brake that fails to release,
- Missing “end cap bolt” on a roller bearing,
- Overheated wheel or journal,
- Broken or cracked wheel,
- Any other apparent safety hazard likely to cause an accident or casualty before the train arrives at its destination,
- Lading leaking from a placarded dangerous goods car,
- Suspicious or dangerous objects, including Improvised Explosive Devices (IED’s),
- Obvious leakage or spillage from grain cars.

On passenger trains, see also Section 9, Item 10.0 – Safety Inspections.

If carrying cars with dangerous goods, see Section 8, Dangerous Goods, item 1.1.

4.2 Performing the Pre-departure Inspection

- Inspect both sides of each car.
- Perform a standing inspection on both sides, or a standing inspection on one side, then a roll-by inspection on the other.
- The roll-by inspection must not exceed 5 MPH.

Note: A pre-departure inspection may be made before or after the car(s) is added to the train.

4.3 Hazardous Condition Found

If any hazardous condition is found during the pre-departure inspection, then:

- report it to the proper authority and if safe to do so:
- correct the condition, or
- remove the defective car from the train, or
- move the car to another location, taking whatever actions necessary to ensure the safe operation of the train and the safety of the employees (e.g., reduce speed).

Note: Before entering the USA, defective cars must be set off at a location capable of making repairs.

5.0 Train Inspection Intervals

5.1 No train may be operated in excess of 60 miles, or move past 2 consecutive non-operational hot box detectors without having been inspected on each side of the entire train. These inspections must be performed by:

- (i) hot box detectors; or
- (ii) pull-by inspection by crew members of the train; or
- (iii) passing train inspection by:
 - wayside employees, or
 - crew members of other trains.

Note: Passing train inspections must be conducted by 2 employees on opposite sides of the train, within 1 train length of each other.

The inspection results must be conveyed to the train crew to be considered an inspection.

6.0 Locomotive Engineers Inspecting Passing Trains

In the application of CROR Rule 110 (a) the Locomotive Engineer must complete a full service brake pipe reduction before vacating the cab of the locomotive.

7.0 Crew Change Pull-by Inspections

7.1 Trains operating WITHOUT a caboose must perform a crew change pull-by inspection (as per item 8.0) if the train meets ANY of the following three conditions:

a) train consist documents state:

 PULL BY INSPECTION REQUIRED AT CREW
 CHANGE POINTS AS PER GOI SECTION 5
 ITEM 7.1 APPLIES
 IN CANADA ONLY

b) it is known or suspected that the train contains loads prone to shifting.

- Loads prone to shifting include: lengthwise loads of pipe, timber, poles, metal rods or other similar material, that are not protected by end bulkhead to top of lading.

Note: Loads NOT prone to shifting include:

- flat cars loaded with steel plates or machinery, and
- bulkhead flats loaded with banded or packaged lumber which does not extend above the bulkhead by more than 50 percent.

c) the train contains one or more cars containing dangerous goods (including residue cars) for which an Emergency Response Assistance Plan (ERAP) is required as identified by consist header (a).

Note: For cars lifted enroute, Compressed Waybill and/or Shipping Document will indicate a ERAP/ERP number if applicable.

7.2 Notification of Crew Change Pull-by Inspection

If a pull-by inspection will be needed, but the train consist documents do NOT contain the warning described in item 7.1 a), then the incoming conductor must advise the:

- RTC,
- Responsible manager, (if applicable)
- outgoing crew (when a personal transfer occurs)

The need for a crew change pull-by inspection must be reported on the **Crew to Crew Form**.

7.3 OTHER than Regular Crew-Change Points

When a crew change pull-by inspection is required under the provisions of item 7.1:

- If the relieving crew takes over control of the train directly from the relieved train crew, then no inspection is required.
- If the relieving crew does NOT take over control of the train directly from the relieved train crew, then a pull-by inspection (or combination standing pull-by inspection) is required.

7.4 Trains entering Canada from the USA

All trains entering Canada from the United States must receive a pull-by inspection at the first crew change location encountered in Canada.

Note: Trains that receive a pull-by inspection at border locations comply with this instruction.

8.0 Pull-by Inspection Procedure

- 8.1 Performing pull-by inspection (for other than meeting the purposes of the Section 13: *Air Brake Tests and Procedures*)

Both sides of the train must be inspected.

Position a crew member (or other qualified person) on each side of the track close to the moving train.

If only one crew member is available, then a standing inspection, or combination standing/pull-by inspection is permitted.

Movement must not exceed 15 MPH.

Inspect for defects and dangerous conditions.

Positioned employees must inspect for defects and dangerous conditions, including indications of.

- sticking brakes,
- skidded wheels,
- damaged or derailed equipment, and
- any apparent condition deemed unsafe for continued movement.

Inspection results at crew change points.

At crew changes, the outbound crew must be given the results of the pull-by inspection:

- verbally (in person, or by radio), or
- by the Crew to Crew Form (when the outbound crew does not take over control directly from the inbound crew).

If the outbound crew does not receive the inspection results, then an outbound pull-by inspection must be performed.

Note: All defects noted during a pull-by inspection must be reported on **Form 1225** and faxed to the **NMC Car Planning Specialist: (403) 205-9127**

9.0 Inspection When Equipment is Stopped on a Bridge.

- a) On a bridge without catwalks, where types of railway equipment permit, or where the bridge structure itself permits:
 - crews may use these to gain access to the trouble area or traverse the bridge;
 - employees must not put their personal safety in jeopardy;
 - employees must not walk on tops of cars with running boards removed.
- b) Car(s) stopped on a bridge requiring replacement of air hoses or knuckles may be pulled off the bridge with brakes applied provided:
 - sufficient brakes on the remaining cars on the train can be released to permit movement without the use of excessive force.
- c) Where car(s) stopped on a bridge have more serious defects, or where the train cannot be moved account insufficient brakes released;
 - the RTC or Operating department must be contacted for assistance.

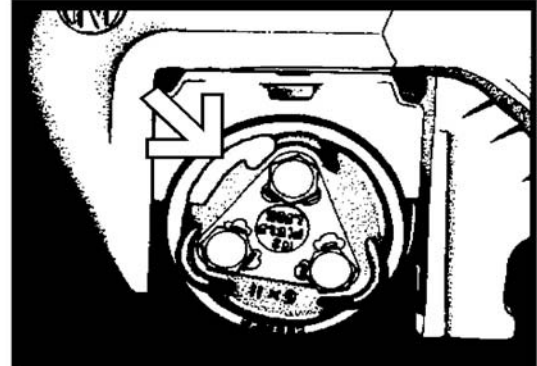
10.0 Defect Suspected - IMPORTANT

When, an overheated bearing or other defect is suspected by other than an HBD inspection, item 22.0:

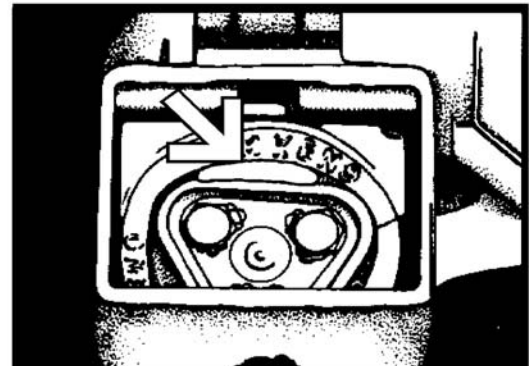
- stop the train immediately, and
- make a close inspection.

11.0 Overheated Bearings**11.1 Testing for Overheated Bearings**

- a) Roller bearings - apply a temperature indicating crayon to the face or side of the outer ring (cup) of the roller bearing.

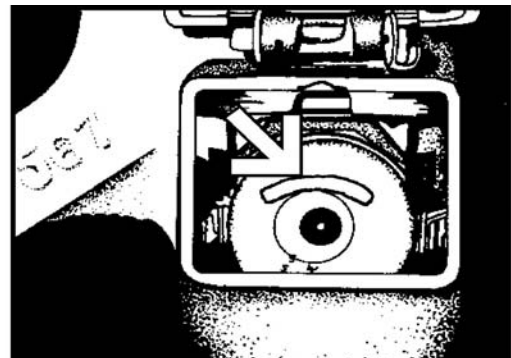


Roller Bearing



Roller Bearings Inserted in Friction Bearing Truck Side Frames

- b) Plain bearing - open the journal box cover and apply a temperature indicating crayon to the end of the journal.



Plain Bearing

- c) Check heat indicators if so equipped.

11.2 Bearing Inspection using the Back of the Bare Hand and Temperature Indicating Crayons (200°F):

CAUTION: When using the back of the hand, **do not** physically touch the bearing housing if excessive heat is felt as your hand approaches the bearing housing or axle.

A Required Equipment:

- All crew members, other than locomotive engineers, of each movement must be in possession of a temperature indicating crayon (200°F).

B Crayon Application:

- Use crayon as per illustrations in item 11.1
- Crayon may not melt at or below freezing.

C Crayon Results:

- Wax-like, shiny smear indicates overheated bearing.
- Thin, coloured line indicates the metal is not overheated (i.e., metal is below the temperature indicated on the crayon).

D Inspection Procedure:

- Inspection for suspected overheating must include feeling the roller bearing housing using the **back of the bare hand** and use of the **temperature indicating crayon**.
- When using the temperature crayon, the employee performing the duties **must mark the bearing housing and end bolt(s)** with sufficient force with the crayon to make an identifiable mark to indicate that it has been checked. (see second bullet 11.2 (c)).
- In all cases, inspection must be as instructed by Section 5, item 24.0, which requires an inspection of 8 axles in both directions, both sides from a defect that is found and 16 axles in both direction, both sides if no **defect is found**.

11.3 Overheated Bearing Confirmed

If a bearing has overheated, then:

- set-out the car at the first available location, or location designated by the Time Table,
- complete **Form 1225**, and notify the RTC.

12.0 Overheated, Hot, Skidded, and Shelled Wheel Defects

12.1 Overheated Wheels (Pre-departure Inspection/En route)

This applies to trains detecting hot wheels en route, or at any location where a freight car is to be placed in a train and a certified car inspector is not on duty to conduct inspections.

a) Safety Defect:

- Heat discoloration on any type of wheel which extends more than 4 inches from the rim into the plate, on both the front face and back face.

b) Actions to be taken:

- Set off car with safety defect at first available location;
- Do not place a car with a safety defect in the train;
- Complete **Form 1225**, and notify RTC.

12.2 Hot Wheels (En route)

a) Detection/Description:

- Trains required to stop and inspect for a hot wheel condition (i.e. stopped at hot box detectors);
- Usually caused by sticking brakes or set hand brakes.

b) Safety Defect:

- Brakes that cannot be released.

c) Actions to be taken:

1	Check for sticking air brakes and set hand brakes. (Refer to item 13.0, Sticking Brakes, for cause and release of sticking brakes.)
2	If the brakes are successfully released, then perform a pull-by inspection of the car to ensure: <ul style="list-style-type: none"> • wheels are turning freely, and • all skids and shells are detected.
3	If the brakes cannot be released, then the car must be set off at the first available location.
4	Complete Form 1225 , and notify RTC.

12.3 Skidded and Shelled Wheels

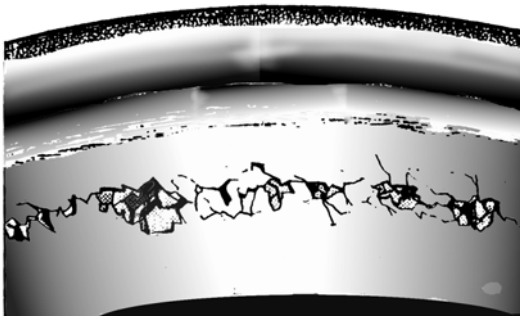
a) Detection/Description:

- Detected by observing or being advised of pounding wheels.
- Skidded wheel - a wheel that has flat spots.



Skidded Wheel

- Shelled wheel - a wheel tread defect where portions of the tread surface are missing.



Shelled Wheel

b) Safety Defects:

- A skid measuring more than 2 ½ inches in length.
- Two adjoining skids each measuring more than 2 inches in length.
- A shell spot that is more than 1 ¼ inches in width and 1 ½ inches in length.

c) Actions to be taken:

1	If other than a UTO mandated inspection, proceed at SLOW SPEED to the first location where an inspection for skidded and shelled wheels can be made.
2	Closely inspect for skids and shell spots, measuring to determine if safety defects exist.
3	Check for sticking air brakes and set hand brakes. (Refer to item 13.0, Sticking Brakes, for cause and release of sticking brakes.)
4	If the brakes are released, then perform a pull-by inspection of the car to ensure: <ul style="list-style-type: none"> • wheels are turning freely, and • all skids and shells are detected.
5	If any safety defects exist, then the car must be set off at the first available location.
6	Complete Form 1225 , and notify RTC.

12.4 Wheel Impact Load Detector (WILD) Sites

When wheels with excessive impact are measured by a WILD site, crews are governed by advice received from the RTC, rather than item 12.3 c) above.

13.0 Sticking Brakes

Sticking brakes refers to brake shoes that are against the wheel (applied position) when they should be clear of the wheel (released position).

13.1 Indications of sticking brakes:

- a) A defect indicated by a Hot Box Detector System.
- b) Brake cylinder piston in applied position.
- c) Hand brake chain tight.
- d) Noise of brake shoes against rotating wheels.
- e) Odour of hot metal or burning oil.
- f) Smoke, sparks or fire around wheels and brake shoes.
- g) Sliding wheels.

13.2 Causes of sticking brakes:

- a) An insufficient brake pipe reduction to ensure proper release.
- b) Hand brake not fully released.
- c) Retaining valve not in direct exhaust position.
- d) Defective automatic slack adjuster.
- e) Binding or fouled brake rigging.
- f) Overcharged air brake systems.
- g) Excessive brake pipe leakage.
- h) Defective control valve.

13.3 To release a suspected sticking brake:

1	Ensure the hand brake is fully released.
2	Ensure the retainer is set to direct exhaust.
3	<p>If the brake cylinder is in the applied position, then request the locomotive engineer to make a full service brake application and then release.</p> <ul style="list-style-type: none"> • If the brakes release on the affected car, then do NOT cut out the car brakes. Proceed. • If the brakes do not release on the affected car, then cut out the car brakes and bleed the air system.
4	<p>If the brake cylinder is in the release position, and the brake rigging indicates the brake is applied, then attempt to release by applying the hand brake fully and releasing several times.</p> <ul style="list-style-type: none"> • If sticking continues the car must be set out at the nearest available point.

14.0 Cutting Out Car Air Brakes

Car air brakes must NOT be cut out except when:

- a) Any portion of the rigging has failed.
- b) There is a continual blow at the control valve exhaust or at the pressure retaining valve.
- c) When pipes are broken beyond the branch pipe cut out cock.

Note: When a brake is cut out at the branch pipe, the combined auxiliary and emergency reservoirs must be completely drained.

15.0 Inspection Required Following an Emergency Brake Application While Moving

15.1 Passenger Trains Stopped by an Emergency Brake Application

Before the movement resumes:

- each car must be inspected to ensure all brakes are released,
- a pull-by inspection of the train must also be made - **without exception**.

15.2 All Other Trains Stopped by an Emergency Brake Application

a)	<p>Complete a pull-by inspection (on at least one side of the train), watching in particular for:</p> <ul style="list-style-type: none"> • skidded wheels, • applied brakes, and • evidence of derailment. <p>If a pull-by inspection cannot be made due to terrain, proceed at SLOW speed to the first location where a pull-by inspection can be made.</p>
b)	<p>If there is evidence of derailed equipment or unusual train action, then stop the train immediately and determine the cause.</p>
c)	<p>Record, on the Crew to Crew Form, the:</p> <ul style="list-style-type: none"> • location the emergency brake application occurred, and • results of the pull-by inspection.

Exception: A pull-by inspection of the entire train is NOT required if ALL of the following conditions are met:

- 1) a pull-by inspection was performed for a previous emergency brake application and documented on the **Crew to Crew Form**;

- 2) Train tonnage is:
 - less than 6,000 tons; or
 - 6,000 tons or more, and each car (except a caboose marshalled as the last car) exceeds 100 gross tons.
- 3) speed at time of the emergency brake application was greater than 25 MPH;
- 4) the emergency brake application occurred within 15 seconds of initiating a service brake application;
- 5) no unusual slack action was noted during the stop;
- 6) when the brakes are released, the air flow indicator and rear car brake pipe pressure readings indicate no loss of air pressure; and
- 7) the train is NOT carrying SPECIAL dangerous commodities.
 - If conditions 1 through 6 have been met, **but** the train is carrying SPECIAL dangerous commodities, then complete a pull-by inspection from the leading locomotive to the last car containing SPECIAL dangerous commodities.

15.3 Employees Performing Emergency Brake Application Pull-by Inspection

This pull-by inspection may be made by:

- crew members of the train itself;
- crew members of a stopped train;
- other wayside employees.

The person making the inspection must have a portable radio and be informed of the situation.

16.0 Reporting Detention or Defects

16.1 Form 1225: “Report of Detention to Trains, Repairs to Cars En route, Air Brake Cut OUT, Disabled Cars Set Out and Hot Box Detector Report”

16.2 The conductor must complete **Form 1225** when:

- a train is stopped for unscheduled inspection,
- a train crew makes repairs en route to any car (e.g. replacing knuckles, air hoses, etc.),
- brakes are cut out,
- any hot box detector information is provided, except “No Alarms,”
- a hot box detector appears to be inoperative.

16.3 The conductor must complete all applicable parts of **Form 1225**, including “Other Particulars.”

- “Other Particulars” should include:
 - the specific location of the defect (e.g., B end, or A end),
 - reservoirs drained or brakes cut out at the branch pipe, and
 - details of inspection (e.g., whether a temperature indicating crayon was used).

16.4 Form 1225 Information.

a) **Conductor** must:

- Transmit **Form 1225** information to the RTC verbally, at first opportunity:
 - car or engine number of the defective or suspected defective equipment;
 - condition found;
 - type of defective bearing (e.g., plain or roller);
 - action taken.
- Leave a copy on the train (for the relieving conductor at run-through terminals, the Mechanical Officer at final destination).
- Fax the original copy of Form 1225 to the NMC – Network Manager Car: **(403) 205-9127**

b) RTC must advise the mechanical department of all details of defective equipment, including:

- set off location,
- nature of temporary repairs, and
- other actions taken (e.g., brakes cut out).

17.0 Crew to Crew Form

The **Crew to Crew Form** provides each relieving crew with information regarding the condition of the train, including:

- hot box detector information and details of inspections, including whether a defect was found;
- emergency brake application inspection report;
- results of inbound train inspection;
- location of all hand brakes applied;
- details of any brakes cut out (including reservoirs drained);
- details of any defective cars being moved in the train (including actions taken to move them safely); and
- locomotive defects.

Note: Locomotive defects must also be reported to the Central Locomotive Specialist (1-800-308-6426).

The Crew to Crew Form remains on the train for the information of train crew members until destination. It is not collected by mechanical services.

HOT BOX DETECTOR and WILD INSTRUCTIONS

18.0 General**18.1 CROR Rules 110 and 111**

These instructions are in addition to the requirements of CROR Rules 110 and 111.

18.2 Definition – “Train”

Where the term “train” appears herein, it also applies to a transfer and/or engine.

HBD EQUIPMENT DESCRIPTIONS**19.0 Hot Box Detectors (HBD) Description**

HBD's operate for trains in either direction on the track in which they are installed.	
HBD's detect the following:	
Dragging Equipment:	Detects equipment dragging between or near the rails.
Hot Box:	Detects overheated journals by measuring the temperature of the heat radiated from the journal box. Hot Box alarms can also be caused by overheated traction motor suspension bearings and sticking brakes.
Hot Wheel:	Detects sticking or dragging brakes, and set hand brakes by measuring the temperature of the heat radiated from the wheel rim.
Temperature:	Measure outside temperature and report it after the entire train passes the HBD. Temperature is used in the application of Hot and Cold Weather Temperature Speed Zones. Note: Temperatures will be given in degrees C in Canada and degrees F in USA.
Some HBD's also detect:	
Dimensional Shipment:	Detect shipments exceeding acceptable dimensions. A dimensional shipment may be loaded or empty, i.e. leaning car body, sagging car body, improper positioning on trucks or shifted load, etc. When the train is passing, a tone is transmitted without an announcement. The final results message specifies dimensional equipment. Time table footnotes indicate locations equipped with dimensional shipment detectors.

20.0 HBD Talker Description

HBD's have a "talker" that transmits, by train radio, a recorded voice message of alarm data. Alarms are announced as the train passes, and are repeated after the entire train passes the HBD location. There are two models of HBD's in use on CP, the older systems will repeat the results message twice while the new model only announces the result message once, a DTMF code must be entered to have the HBD repeat the message. DTMF codes for each HBD will be indicated in the Time Table or by Special Instruction.

Hot box detectors equipped with a bilingual talker transmit a message in French and repeat the message in English.

No Alarms – Final Results Messages

If there are no alarms the talker transmits one of the following messages immediately after the rear of the train passes the HBD.

Older Model HBD: After a two second pause, the message is repeated once, followed by "Message complete; detector out."

New model HBD: No automatic repeat and no post message. DTMF code may be used to repeat last message. Repeated message is preceded by the word "Repeat". ("Message complete; detector out" will not be announced on the repeat.)

No Alarms			
Situation	Older Model HBD Results Message	New model HBD Results Message	Repeat
System working – no alarms	"CP detector, Mile (number), (subdivision), (track), Temperature (temperature) degrees, total axles (number), no alarms."	"CP detector, Mile (number), (subdivision), (track), (temperature) degrees, axles (number), no alarms."	DTMF
System NOT working – no alarms	"CP detector, Mile (number), (subdivision), (track), Temperature (temperature) degrees, total axles (number), system not repeat not working."	"CP detector, Mile (number), (subdivision), (track), (temperature) degrees, axles (number), system not working."	DTMF
		Note: DTMF code to repeat last message preceded by the word "Repeat".	

Alarm Announcements While Passing HBD

As the train passes the HBD, the talker transmits a one second alert tone and announcement for each alarm. The following table summarizes the announcements.

Alarm Announcements while Passing HBD			
Situation	Older Model HBD Announcement	New model HBD Announcement	Repeat
Dragging Equipment	Tone + "dragging equipment"	Tone + "dragging equipment"	None
Hot Box	Tone + "hot box"	Tone + "hot box"	None
Hot Wheel	Tone + "hot wheel"	Tone + "hot wheel"	None
Dimensional Shipment	Tone only	Tone + "Dimensional Shipment"	None

Alarms - Final Results Message

If there are alarms, the talker transmits a two-second tone followed by a final results message. This message is in addition to the alarm announcements and tones while a defect passes the HBD.

The final results message lists defects sequentially, starting with the defect nearest the head-end. Location is given by axle number from the front of the train, including locomotive axles.

Older Model HBD: After a two second pause, the message is repeated once, followed by “Message complete; detector out.”

New model HBD: No automatic repeat and no post message. DTMF code may be used to repeat last message. Repeated message is preceded by the word “Repeat”. (“Message complete; detector out” will not be announced on the repeat.)

Examples of messages are summarized in the following table.

Alarms After Passing HBD			
Situation	Older Model HBD Results Message	New model HBD Results Message	Repeat
Single Alarm	“CP detector, Mile (number), (subdivision), (track), Temperature (temperature) degrees, total axles (number), (number) alarms, (number) alarms.”	“CP detector, Mile (number), (subdivision), (track), (temperature) degrees, axles (number), (alarm type), (rail), axle (number)	DTMF
Six or less alarms (Lists up to six alarms)	“CP detector, Mile (number), (subdivision), (track), Temperature (temperature) degrees, total axles (number), (number) alarms, (number) alarms.” First alarm, hot box, (rail), axle (number) Second alarm hot wheel, near axle (number) Third alarm, dragging equipment, near axle (number) Fourth alarm,... Fifth alarm, ... Sixth alarm, ...”	“CP detector, Mile (number), (subdivision), (track), (temperature) degrees, axles (number), (number) alarms.” First alarm, hot box, (rail), axle (number) Second alarm hot wheel, near axle (number) Third alarm, dragging equipment, near axle (number) Fourth alarm,... Fifth alarm, ... Sixth alarm, ...”	DTMF
More than six alarms (lists first alarm plus instruction)	“CP detector, Mile (number), (subdivision), (track), , Temperature (temperature) degrees, total axles (number). More than six alarms. First alarm, axle (number). Inspect entire train, both sides from first alarm to rear of train, or as instructed.”	“CP detector, Mile (number), (subdivision), (track), (temperature) degrees, axles (number). More than six alarms. First alarm, axle (number). Inspect entire train, both sides from first alarm to rear of train, or as instructed.”	DTMF
System NOT working – with alarms		“CP detector, Mile (number), (subdivision), (track), (Temperature) degrees, axles (number), (One of the above alarm formats), system not working.”	DTMF
		Note: DTMF code to repeat last message preceded by the word “Repeat”.	

21.0 Procedures – Approaching and Passing Over HBDs

21.1 Approaching HBDs

When approaching a HBD...		
Step	Responsible Employee(s)	Action
1	Locomotive Engineer	Brakes – Avoid prolonged use of train brakes where practicable, until the entire train passes the HBD. (This prevents false hot wheel and hot box alarms.)
2	Crew members	Radio - Ensure the train radio is on the correct train standby channel.

21.2 Passing over HBDs

When the train reaches the HBD...		
Step	Responsible Employee(s)	Action
1	Locomotive Engineer	DMD (Distance Measuring Device) – Set the DMD as soon as the train reaches the HBD location. (Distance helps identify defect location and identify when to expect the final results message. Axle count is unavailable until the rear of the train passes over the HBD.)
2	Crew members	Radio – Avoid using the radio system until after the final results message has been transmitted. (This prevents talking over a tone or announcement.)
3	Crew members	Verbal Communication – Confirm, while passing the HBD, any defects announced.

22.0 HBD Alarms and Procedures Summary

No Alarms: If the final results message reports “no alarms,” then **proceed** without an inspection.

Note: If there was an announcement indicating “Hot box”, but the final results report “no alarms”, then resume speed and proceed without an inspection.

Use this table to identify the appropriate HBD procedure for various events.

	Events	Procedure
A	Defect: Dragging equipment announced while passing HBD.	See item 23.1.
B	Defect: Hot box announced while passing HBD.	See item 23.2.
C	Defect: Hot wheel announced while passing HBD.	See item 23.3.
D	Defect: alert tone only while passing HBD.	If this is a dimensional shipment detector, then see item 23.4.
E	Final results message reports “ system not working. ”	a) If any announcement and/or alert tones were heard, then inspect the entire train following the procedures in items 23.1, 23.2, 23.3 and 23.4 as applicable. b) If no announcement and/or alert tones are heard, then inspect the train only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 27.0.
F	Speed is 8 MPH or less passing an operating HBD and final results message reports a defect.	Inspect the entire train following the procedures in items 23.1, 23.2, 23.3 and 23.4 as applicable.
G	Speed is 8 MPH or less passing an operating HBD and final results message reports NO defect.	Inspect the train only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 27.0.
H	Defect announced while passing the HBD, but message unclear or in doubt.	Reduce to Slow Speed and listen carefully to the final announcement.
I	Final results message reports defect, but the location is not heard or is in doubt.	Inspect the entire train following the procedures in items 23.1, 23.2, 23.3 and 23.4 as applicable.
J	No final results message received.	a) If any announcement and/or alert tones were heard, then inspect the entire train following the procedures in items 23.1, 23.2, 23.3 and 23.4 as applicable. b) If no announcement and/or alert tones are heard, then inspect the train only if carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 27.0.
K	HBD withdrawn from service by GBO/DOB or by Operating Bulletin.	No inspection unless the train is carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 27.0.
L	Incorrect axle count and the final results message reports No defects.	<ul style="list-style-type: none"> • No inspection unless the train is carrying SPECIAL dangerous and the HBD is noted by ** in the time table. See item 27.0. • See item 25.0, Incorrect Axle Count.

23.0 Alarm Procedures

23.1 Dragging Equipment

When an alert tone is followed by the announcement “dragging equipment”...	
Step	Action
1	Note the DMD reading.
2	Stop the train immediately using good train handling practices.
3	Perform a stationary train inspection. a) If the entire train passes the HBD location before stopping , then locate the defect using the axle count as per item 24.1. b) If the train is stopped before the entire movement passes the HBD , then locate the defect using the noted DMD distance as per item 24.2.
Note	Do not pull ahead to a crew member to perform the inspection, unless it is unsafe to walk back. If it is unsafe to walk back, then pull ahead not exceeding 10 MPH to inspect for defect. If the train must be pulled ahead over a facing point switch , do not exceed 5 MPH .

23.2 Hot Box

When an alert tone is followed by the announcement “hot box”...	
Step	Action
1	Note the DMD reading.
2	Immediately reduce to Slow Speed using throttle modulation and dynamic brake, and without using the air brakes, if possible. <ul style="list-style-type: none"> If a subsequent announcement states “dragging equipment,” then stop immediately and follow the procedure for dragging equipment.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 24.2, Locating Defects using Measured Distance.)
4	When the rear of the train has passed the HBD and the final results messages have been reported, stop the train, making every reasonable effort to stop before a facing point switch. <ul style="list-style-type: none"> Note: If an inspection point is designated, then proceed at Slow Speed (without stopping) to the inspection point. Exception: if the final results message reports more than six alarms, stop the train immediately to perform the inspection.
Note	If the final results message reports “No Alarms” then resume speed and proceed without an inspection. (The final message corrects for inaccurate readings of converted plain bearing journals).
5	Perform a stationary train inspection. a) Locate the defect using the axle count as per item 24.1. b) See item 11.0, to test for overheated bearings.
Note	Do not pull ahead to a crew member to perform the inspection, unless it is unsafe to walk back. If it is unsafe to walk back, then pull ahead not exceeding 10 MPH to inspect for defect. If the train must be pulled ahead over a facing point switch , do not exceed 5 MPH .

23.3 Hot Wheel

When an alert tone is followed by the announcement “hot wheel”...	
Step	Action
1	Note the DMD reading.
2	Immediately reduce to Slow Speed using throttle modulation and dynamic brake, and without using the air brakes, if possible. <ul style="list-style-type: none"> If a subsequent announcement states “dragging equipment” or “hot box,” then follow the procedure for that alarm.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 24.2, Locating Defects using Measured Distance.)
4	When the rear of the train has passed the HBD and the final results messages have been reported: <ul style="list-style-type: none"> allow a crew member to detrain, and pull the train ahead, not exceeding 10 MPH, to the hot wheel defect. <p>Exception: If an inspection point is designated, then proceed to the inspection point, not exceeding Slow Speed and perform the inspection.</p> <p>Note: If the final results message reports more than six alarms, stop the train immediately and perform a stationary inspection. It is not acceptable to pull the train ahead to the defects.</p>
5	Perform an inspection . <ol style="list-style-type: none"> Locate the defect using the axle count as per item 24.1. To inspect for the hot wheels, see item 12.2, Hot Wheels (En route).

23.4 Dimensional Shipment

This instruction applies only to **HBDs equipped with dimensional shipment detectors**, as listed in the time table subdivision footnotes.

When an alert tone is heard <u>without</u> an announcement...	
Step	Action
1	Note the DMD reading.
2	Immediately reduce to Slow Speed using throttle modulation and dynamic brake, and without using the air brakes, if possible. <ul style="list-style-type: none"> If a subsequent announcement states “dragging equipment” or “hot box,” then follow the procedure for that alarm.
3	Observe the train for defects. If the defect is visible from the cab of the locomotive, then stop the train immediately and inspect. (See item 24.2, Locating Defects using Measured Distance.)
4	When the rear of the train has passed the HBD and the final results messages have been reported: <ul style="list-style-type: none"> allow a crew member to detrain, and pull the train ahead, not exceeding 10 MPH, to the dimensional shipment. <p>Exception: If an inspection point is designated, then proceed to the inspection point, not exceeding Slow Speed and perform the inspection.</p>
5	Perform an inspection , using axle count to locate the defect as per item 24.1.

24.0 Procedures for Locating Defects

24.1 Locating Defects using Axle Count

When available, use axle count to locate defects (rather than distance measured using the DMD).

Step	Action
1	Note the location of the defects stated in the final results message.
2	Locate the defects by counting the actual axles from the front of the train, beginning with the lead locomotive. Ensure cars and locomotives with other than four axles are not counted as having four axles.
3	Inspect the train in the specified location. <ul style="list-style-type: none"> If a defect is found at or near the indicated location, then inspect both sides of the train for 8 axles in each direction from the suspected defect. (This helps verify that the defect has been correctly identified.) If a defect is not found at the indicated location, then inspect both sides of the train for 16 axles in each direction from the indicated location.
4	If any part of the train passed the HBD at 8 mph or less , then inspect the entire train for additional defects.
5	Notify the RTC of the inspection results and take appropriate action (e.g., make repairs, set off car, etc.).
6	Complete the reporting requirements . See: <ul style="list-style-type: none"> item 16.0, Reporting Detention or Defects, and item 17.0, Crew to Crew Form.
7	If the defect was a suspected hot box and no defect was found , see item 26.0, No Defect Found - Hot Box.
Note	Alarms from hot wheel detectors and dragging equipment detectors can only indicate the general vicinity of the alarm, rather than an exact location.

24.2 Locating Defects using Measured Distance

When axle count is unavailable, locate defects using DMD distance measured.

Step	Action
1	Determine the approximate location of the defect by using the: <ul style="list-style-type: none"> noted DMD distance, and train consist information (e.g., train length 2000 foot indicators, etc.)
2	Inspect the train at the measured location. <ul style="list-style-type: none"> If a defect is found at or near the indicated location, then inspect both sides of the train for 8 axles in each direction from the suspected defect. (This helps verify that the defect has been correctly identified.) If a defect is not found at the indicated location, then inspect both sides of the train for 16 axles in each direction from the indicated location.
3	Inspect the entire train for additional defects.
4	Notify the RTC of the inspection results and take appropriate action (e.g., make repairs, set off car, etc.).
5	Complete the reporting requirements . See: <ul style="list-style-type: none"> item 16.0, Reporting Detention or Defects, and item 17.0, Crew to Crew Form.
6	If the defect was a suspected hot box and no defect was found , see item 26.0, No Defect Found - Hot Box.

25.0 Incorrect Axle Count

When a HBD reports an incorrect Axle Count...	
Step	Action
1	Advise the RTC of the incorrect axle count and arrange to verify train consist information. <ul style="list-style-type: none"> If the train is carrying an additional car or cars and any of these are dangerous goods cars, then arrange for a radio waybill (Section 8, item 3.7). If any of these additional cars are SPECIAL dangerous, then the inspection requirements at HBDs indicated by a double asterisk (**) in the time table apply (item 27.0).
2	Use Form 125 (or any other appropriate form) to record the correct information.
3	If the train has placarded cars , then update the train consist to show the correct position of all placarded cars. (See Section 8, item 4.0.)
4	If the train has SPECIAL dangerous, then see item 27.0.
5	Communicate the correct information to the outbound conductor, and MYPM or Terminal Supervisor

26.0 No Defect Found - Hot Box

Whenever a car or engine is identified by an alarm for the defect "hot box" at the same axle location twice within 75 miles, and there is no apparent reason for the alarms, that car or engine must be set off at the designated set-off point.

Important: At crew-change points, leave the relieving crew a copy of **Form 1225** and **Crew to Crew Form** for any car or engine remaining on the train that was identified by a "hot box" alarm within 75 miles of the crew change point.

26.1 Passing Occupied Service Equipment cars

In the event that a car or engine is identified by an "hot box" alarm and no defect is found. Such train or engine is restricted to a maximum of 10 MPH while passing occupied service equipment cars as identified by GBO as per GOI Section 7, item 19.4, until passing the next operational detector with no "hot box" alarm.

27.0 SPECIAL Dangerous at Double Asterisk () HBD – Mandatory Inspection**

HBD identified in the time table by a double asterisk (**) indicate mandatory inspection points for trains carrying SPECIAL dangerous commodities. **Note:** the HBD must report a complete and accurate inspection.

- a) If a train carrying SPECIAL dangerous commodities passes a HBD identified with a double asterisk and:
 - the HBD is withdrawn from service,
 - the HBD reports "System Not Repeat Not Working" or is otherwise known to be inoperative,
 - any part of the movement passes the HBD at 8 MPH or less,
 - no message is received, or
 - the HBD reports incorrect axle count and system reports No alarms
then inspect the train **within one mile** of the mileage shown in the subdivision footnotes.
- b) Perform the inspection:
 - on both sides,
 - from the front of the train to and including eight axles behind the last full carload, containerload, or trailerload of a SPECIAL dangerous commodity,
 - at a speed not exceeding 5 MPH.
- c) The inspection can be performed by:
 - Mechanical department inspectors,
 - Crews of standing trains or transfer movements,
 - A pull-by inspection by crew members, or
 - A standing inspection.

28.0 Reporting Defective HBDs

- a) Notify the RTC when a HBD:
 - transmits a message to “inspect the entire train;”
 - does not transmit any messages;
 - transmits an improper message;
 - transmits a message difficult to hear or understand;
 - transmits the message “system not repeat not working;”
 - total axle count does not appear to be correct; or
 - reports a defect, but upon train inspection there is no defect found.
- b) Include appropriate details such as:
 - HBD location,
 - defect axle number,
 - suspect car number,
 - train direction,
 - side of train, and
 - type of defect reported by the HBD.
- c) The RTC must report this information to the appropriate S&C Support DESK.

29.0 Hot and Cold Weather Temperature Speed Zones

Note: Cold Weather Temperature Speeds do not apply to passenger trains.

- a) During extreme hot and cold weather, trains are governed by specific speed restrictions. The speed restrictions / zones, and specific hot & cold temperature ranges are specified by GBO and/or Summary Bulletin (SB).
 - When specific whole miles are indicated in the GBO/SB, the speed restrictions only apply between the mileages stated.
 - The HBD temperature announcement prior to the mileages stated, or as determined by thermometer, will govern speed until the next HBD transmission.
 - When no specific mileages are indicated in the GBO/SB, the speed restriction applies to the entire subdivision, unless or until otherwise indicated.
- b) The conductor must:
 1. Record the temperature on the Crew to Crew form (Other important information to subsequent crews section).
 2. Advise the RTC when a Hot or Cold weather speed restriction goes into effect and when it is terminated.

3. Transfer this information to the relieving crew, when applicable.
- c) When leaving an initial station or crew change point while extreme Hot or Cold weather temperature is suspected, determine the outside ambient temperature:
 - using an outside thermometer, or
 - as indicated on the Crew to Crew form.

If in doubt as to the outside ambient temperature, the speed restriction applies.

30.0 Steam Locomotive CP 2816

When a hot box detector broadcasts a hot box or hot wheel alarm(s) for any of the 7 axles of CP 2816, the alarm(s) may be disregarded providing that the locomotive is operating (under steam).

Exception: If more than **6 alarms** occur, then inspect the entire train as per item 23.2, Hot Box and item 23.3, Hot Wheel.

31.0 Wheel Impact Load Detectors (WILD)

- 31.1 Wheel Impact Load Detectors (WILD) measure excessive wheel impact on rail and identify defective cars using AEI car tag IDs.

The WILD transmits the information to a central location. Train crews do **not** hear a tone or a message. When a defective car is identified, the RTC relays instructions to the crew (e.g., speed restriction, set off location).

It is important to set off the car specified by the RTC, because serious defects may not be heard, visible, or otherwise identifiable by train crews. (e.g., A wheel out of round, with no associated sound, may create a greater rail impact than a skidded wheel that is audible.)

WILD detectors are installed at HBDs and other stand alone sites as follows.

<u>Subdivision</u>	<u>Mileage</u>
Mountain	47.80
Red Deer	22.80
Brooks	147.47
Swift Current	30.90
Indian Head	103.40
Carberry	43.05
Kaministiquia	59.37
Cartier	88.10
MacTier	25.46
Galt	42.72
Lacolle	18.74

General Operating Instructions (GOI)

Section 6

TIBS Instructions

TABLE OF CONTENTS

1.0	Trains Operating With Train Information Braking Systems (TIBS).....	54
2.0	TIBS Arming Feature	55
3.0	Operation and Displays of Sense and Braking Unit (SBU).....	56
4.0	Operation of Highly Visible Marker (HVM).....	57
5.0	Operation of IDU	57
6.0	Operation of Model 6656 CDU	58
7.0	Operation of Model 6696 CDU	58
8.0	ATX – Air Turbine SBU	60
9.0	Motion Detector System.....	61
10.0	Emergency Braking Feature	61
11.0	Communications Test	61
12.0	Alarms	62
13.0	Pre-Installation Testing of SBU at Major Terminals:.....	62
14.0	Pre-installation Testing of SBU at Other Than Major Terminals.....	62
15.0	Installation of SBU	63
16.0	Pre-Departure Testing of TIBS	63
17.0	Installation of Display Unit.....	64
18.0	Shop Track Tests of Display Unit	64
19.0	Definitions & Operating Procedures in Event of TIBS Failure	65
20.0	Distance Measuring Device (DMD)	66
21.0	Proper Protection Required	66
22.0	Transportation (Deadheading) of SBUs.....	67
	End of Train Setup for TIBS EMD Fire Screen	68
	End of Train Setup for TIBS GE ACs	68

1.0 Trains Operating With Train Information Braking Systems (TIBS)

1.1 The TIBS is composed of either two or three separate units as follows:

Note: When the term “display unit” is used in these instructions, it refers to CLU, IDU, CDU, IFD, ICE or FIRE

1.2 Sense and Braking Unit (SBU)

The SBU senses brake pipe pressure, motion and direction and transmits this information to the head-end of the train. The SBU is equipped with either a red reflectorized plaque or a highly visible marker (HVM).

Note: Further references in this section to the HVM do not apply unless the SBU is so equipped.

In addition, the SBU is equipped with an emergency braking feature.

1.3 Communications Logic Unit (CLU)

A device located in the short hood of the locomotive which accepts, analyzes and forwards information for display in the cab of the locomotive.

1.4 Input and Display Unit (IDU)

The IDU provides audible alerts and displays to the locomotive engineer.

1.5 Communications Display Unit (CDU)

The CDU accepts, analyzes and displays information relevant to the rear of the train. The CDU provides audible alerts and displays to the locomotive engineer.

1.6 Integrated Function Display (IFD), Integrated Cab Electronics (ICE) and Functionally Integrated Railroad Electronics (FIRE)

The IFD is the menu driven operator’s screen on GE AC locomotives; ICE or FIRE are the operator’s screen on SD90MAC locomotives.

IFD, ICE and FIRE accept and display information relevant to the rear of the train.

1.7 Procedure to Disconnect Head-End Display Unit

When necessary to disconnect the display unit, place the radio circuit breaker in the OFF position and then disconnect the twist lock connector.

Once the twist lock connector is removed, it is to be placed in the dummy receptacle (where provided) and the display unit keyed to indicate the test ID code of 00000.

Note: To disconnect the display unit on 9000 series locomotives, the circuit breaker marked ETU is to be placed and remain in the OFF position.

1.8 Disarming SBU (TIBS) and set SBU code to 80000

After the locomotives are cut-off from a train which has arrived at its terminating location, the locomotive engineer must disarm the TIBS emergency feature as follows:

A	On a GE ACs... press EOT Setup, Request Disarm and Disarm Two-Way . Set display unit to SBU code 80000 and press Enter Code .
B	On EMD SD90MACs... press EOT IDENT, EOT 00000, and UNARM TWO WAY . Set display unit to SBU code 80000 and press ENTER IDENT .
C	On EMD SD90MAC (Fire Screen)... press EOT ID, EOT 00000, and UNARM TWO WAY . Set display unit to SBU code 80000 and press ENTER ID .
D	On a DC traction locomotives... with IDU+CLU or CDU, set the display unit to SBU test code 00000 and press the COMM/ARM button to disarm the SBU. Set display unit to SBU code 80000 .

2.0 TIBS ARMING FEATURE

2.1 ARMING of TIBS is to be performed as follows:

1	Enter the ID Code of the SBU assigned to the train into the display unit, e.g. 80801.
2	During pre-departure testing, when the test button on the SBU is pressed, the display unit will sound an audible alert and display "ARM NOW" for five seconds.
3	To ARM the display unit, the COMM TEST button must be pressed within the five second interval in which the "ARM NOW" display is shown. This will cause the display unit to indicate "ARMED."
4	The COMM TEST button must not be pressed until the display indicates "ARM NOW." Pressing the button in advance of this display will cause the following: A - an audible alarm will sound and the display will flash "NOT ARMED." Locomotives equipped with an IFD display "EOT EMERG STATUS DISABLED"; B - the display will revert to normal, with the exception that "U" will be displayed in the COMM field, or the NOT ARMED indicator will be illuminated, as a reminder that the display unit is not armed. Locomotives equipped with an IFD continue to display "EOT EMERG STATUS DISABLED."

2.2 Once TIBS is armed, if the display unit ID code is changed from that to which the system is armed, the display or light will flash NOT ARMD. After a brief period the system will revert to normal display accompanied by "U" or "NOT ARMED" light as a reminder that the display unit is not armed to the ID code entered therein. Locomotives equipped with an IFD will display "EOT EMERG STATUS DISABLED."

2.3 IFD Arming Procedure

A	There are two varieties of IFD. Check EOT Status window. If it displays "Armed" you must disarm it before arming to a new SBU ID (See Disarm Procedure). If it does not display "Armed," continue with the arming process. Select "EOT Setup" Screen CP GE Locomotives <ul style="list-style-type: none"> The last, current or 80000 EOT Code is displayed, Use Arrow keys to enter new EOT Code. Press F6 'Enter Code.' CP GE EVO Locomotives 8700 to 8899 <ul style="list-style-type: none"> Press F3 'Modify ID Code'. Use 0-9 keys to enter new EOT code. Press F7 'Accept'. Note: On all CP GE AC's, the % battery used indicator is not functional. It will show *** or an incorrect percentage.
B	Arming Procedure continued... <ul style="list-style-type: none"> Personnel at end of train is instructed to press button on the SBU. EOT Status flashes "Arm Now." F7 flashes 'Arm Two Way.' Press F7 immediately. You have only 3 seconds to do this. If successful, EOT Status window reads 'Armed.' 'Rear' indicates air pressure at end of train. Note: The EOT Comm Test window does not update when armed and so may indicate 'failed.' You must press the Comm Test button to get the corrected indication.
C	Disarm Procedure ... CP Locomotives 9500 to 9582 Only <ul style="list-style-type: none"> Press F8 'Exit', then F3 'EOT setup'. Press F6 'Request Disarm' Press F7 'Disarm 2-Way'. EOT Status displays 'Not Armed'

2.4 TIBS Arming for EMD (SD90MAC) ICE and FIRE Screen

For arming procedures refer to the job aids on RailCity or the Internet.

3.0 Operation and Displays of Sense and Braking Unit (SBU)

3.1 SBU Model 6651

Operation																	
A	The SBU self-activates when brake pipe pressure rises to 10 psi. When the pressure is less than 5 psi for a period of 5 minutes the SBU will automatically shut down to conserve the battery.																
B	A viewing window on the SBU allows employees to view the brake pipe pressure display for a period of 5 seconds, any time the test button is pressed.																
C	Pressing the test button initializes the arming feature.																
D	Indications which the SBU is capable of displaying and their meanings are as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>1 JXX</td> <td>(e.g.: 1 J20) indicates normal power up sequence.</td> </tr> <tr> <td>ROM</td> <td>Indicates that the SBU has detected an internal fault and must be removed for servicing.</td> </tr> <tr> <td>075</td> <td>Indicates normal pressure display of 75 psi.</td> </tr> <tr> <td>99%</td> <td>Any number preceding the % symbol indicates the timed battery charge remaining. If the percentage falls below 50% the batteries must be changed out.</td> </tr> <tr> <td>W50%</td> <td>Indicates the battery is weak and has approximately 12 hours of operating life remaining.</td> </tr> <tr> <td>R40%</td> <td>Indicates imminent battery failure and that the battery may not last until the next regular scheduled change-out point.</td> </tr> <tr> <td>A20%</td> <td>Indicates that the battery has failed and that the SBU will not transmit.</td> </tr> <tr> <td colspan="2">Note: If displays other than those listed above appear, the SBU must be removed for servicing.</td> </tr> </tbody> </table>	1 JXX	(e.g.: 1 J20) indicates normal power up sequence.	ROM	Indicates that the SBU has detected an internal fault and must be removed for servicing.	075	Indicates normal pressure display of 75 psi.	99%	Any number preceding the % symbol indicates the timed battery charge remaining. If the percentage falls below 50% the batteries must be changed out.	W50%	Indicates the battery is weak and has approximately 12 hours of operating life remaining.	R40%	Indicates imminent battery failure and that the battery may not last until the next regular scheduled change-out point.	A20%	Indicates that the battery has failed and that the SBU will not transmit.	Note: If displays other than those listed above appear, the SBU must be removed for servicing.	
1 JXX	(e.g.: 1 J20) indicates normal power up sequence.																
ROM	Indicates that the SBU has detected an internal fault and must be removed for servicing.																
075	Indicates normal pressure display of 75 psi.																
99%	Any number preceding the % symbol indicates the timed battery charge remaining. If the percentage falls below 50% the batteries must be changed out.																
W50%	Indicates the battery is weak and has approximately 12 hours of operating life remaining.																
R40%	Indicates imminent battery failure and that the battery may not last until the next regular scheduled change-out point.																
A20%	Indicates that the battery has failed and that the SBU will not transmit.																
Note: If displays other than those listed above appear, the SBU must be removed for servicing.																	
E	Use of the test button after initial power up, will result in pressure and timed battery charge displays only.																
Note: Regardless of the percentage of timed battery charge remaining, the batteries must be changed out at any time the display indicates "W," "R" or "A." Each time a battery is first installed, the display will indicate "99%" as it is based on time and not on voltage. It is possible to have a "W99%" display in which case the batteries must be changed out.																	

3.2 SBU Model 6695

Test Button Operation	
Note: The test button must be pressed and held until the display shows the feature desired.	
Menu Items ...	
1 - PRESSURE	
Releasing the test button when the word "PRESSURE" appears allows you to read the brake pipe pressure.	
2 - ARM	
ARMING: Releasing the test button when the word "ARM" appears will start the "ARMING" sequence.	
3 - TEST	
Releasing the test button when the word "TEST" appears will start a self test. The SBU display will scroll the following items during the test.	
Display	Definition
CANADIAN PACIFIC RAILWAY DIGITAIR REV 5	Indicates equipment owner and software version.
BATTERY OK##	Indicates the batteries are OK and have between 39% and 99% of the charge remaining.
BATTERY LO##	Indicates the batteries are low and have between 12% and 39% of the charge remaining. When LO is displayed, both batteries must be changed.
BATTERY WEAK	Indicates the batteries are less than 12% and must be replaced.
BATTERY REPLACE	Indicates the time the battery is expected to operate has been exhausted and batteries must be changed.
SELF TEST GOOD	Indicates the SBU is functioning properly. If not displayed or an error message is displayed, the unit must be removed for servicing.
PRESSURE P ###	Indicates the brake pipe pressure (where ### is the pressure). HVM will flash for 30 seconds.

4 - PHOTOCCELL

Releasing the test button when the word "PHOTOCCELL" appears allows you to test the HVM operation. Pressing the test button again ends the test.

5 - LITE

Releasing the test button when the word "LITE" appears will activate a feature where the HVM will continue to flash with no air pressure and light present. THIS FEATURE IS NOT USED ON CP. If selected by mistake, lay the SBU gently on its side to deactivate.

During pre-installation and testing of the Model 6695 at other than major terminals, at locations not equipped with an air supply and/or test CLU/IDU, the following pre-installation tests must be performed to verify the SBU is operating as intended:

- A** - Install fully charged batteries.
- B** - Depress the test button and release when the display indicates "TEST" and observe the test procedure.
- C** - Ensure the display indicates "Self Test Good" and does not indicate "Battery LO##," "Battery WEAK##," or "Battery REPLACE."

Enhanced train consists will indicate when a train is equipped with a Model 6695 SBU.

- 3.3** SBUs in the ID number series CPT-85318 to CPT-85368 and CPT-85806 to CPT-85813 are stencilled with "NOT PERMITTED OFF LINE" on the side frame panel. These SBUs are NOT to be used on trains or transfers going to foreign carriers. This restriction does not apply to trains temporarily detoured over foreign railways due to track closures.

4.0 Operation of Highly Visible Marker (HVM)

The OFF/ON status of the HVM is indicated on the display unit in the locomotive cab.

4.1 Manual HVM Light Test

To perform a manual test on the HVM, the SBU must first be powered up. During daylight hours, to activate the light, cover the photo-electric cell. This test will only be performed at the location where the SBU is initially installed on the train.

4.2 Automatic HVM Light Test

The HVM will self test when a train has been standing for at least 30 seconds, and then starts moving. During daylight hours, a marker light ON indication will appear briefly on the display unit. During darkness, the photo-electric cell will keep the HVM activated continuously. Failure to operate as described above will indicate either of the following problems:

- A** - If the marker light ON indication does not appear with first movement, the HVM may be defective.
- B** - If the replace battery indication is displayed, the batteries may be too weak to turn the light on.

5.0 Operation of IDU**5.1 POWER ON SEQUENCE**

When the power is first applied, a series of self-diagnostic tests will cause displays as follows: DIGITAIR, 6650 J20, and **** **

- 5.2** All characters will remain displayed until receipt of a message bearing the same ID code.
- 5.3** The buttons on the IDU labelled **C** and **D** have no application on CP. The button marked **P** is used to adjust the brightness of the display panel.
- 5.4** In addition to continuously displaying information relevant to the rear of the train, the IDU provides audible warnings for: LOW PRESSUE, NO AIR, LOSS OF COMUNICATION, BATTER STATUS, FAILURE OF THE EMERGENCY VALVE, HVM STATUS CHANGES and ARMING STATUS.

6.0 Operation of Model 6656 CDU

- 6.1 Operation of the CDU is similar to that of the IDU.
- 6.2 The CDU is provided with a **VIEW** Key and a **SET** Key.

VIEW Key:	Used to select available functions.
SET Key:	Used to set parameters of functions selected with the VIEW key.
When ID function is selected:	Pressing the SET key once will activate SET ID mode and enable entry of a new ID code.
When SET key a second time:	It will cause the CDU to store the new ID and the alphanumeric display will indicate STORING.

- 6.3 Functions which may be selected with the **VIEW** key are:

- VOLUME
- LAMPTEST
- BLANK
- return to previous stored ID code

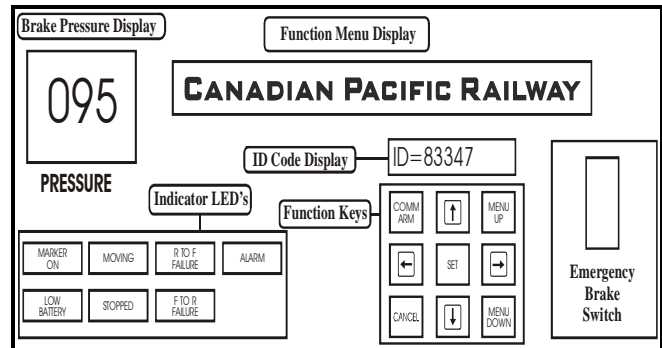
- 6.4 Using the **SET** Key

Used in **SET ID** mode:

- a flashing digit is displayed in leftmost position of the Numeric Display;
- the **ODOM** Key and **DIM** Key take on the arrow functions;
- to change the value on the Numeric Display, use the Arrow Keys [**→←**] or [**↑↓**] to select and change the digit(s);
- when the desired ID code has been entered, press the SET Key again to store it.
- to cancel, or return to original ID code selection, press VIEW key. CANCEL will be displayed accompanied by an audible tone.
- Used to adjust volume of the SONALERT audible tone. Each press of the SET Key will change the volume.
- Used in LAMPTEST mode: Verifies operation of all Front Panel Display LEDs.
- Used in BLANK mode: Extinguishes all displays except pressure.

- 6.5 Using the **DIM** Key adjusts brightness of the Front Panel Display LEDs.

- 6.6 It is essential that the ID code entered into the display unit matches that of the SBU installed on the train, thereby preventing display of erroneous information.

7.0 Operation of Model 6696 CDU

- 7.1 Functions which may be selected with "MENU UP" or "MENU DOWN" are:

- Change ID
- Change train length
- Odometer
- TL Distance
- Measured mile
- Disarm
- Change loudness
- Change brightness
- Self test

7.2 Changing ID Code

1 To change the ID code:	Press the MENU UP or MENU DOWN key until the function menu display reads "change ID #####". The ID code is changed by using the [→] or [←] keys to select digits to be modified. The current active digit flashes. Use the [↑] or [↓] keys to increment or decrement the selected active digit.
2 Once the ID code has been selected:	Press the SET key to store the new ID code.
3 Function menu display will read:	"Saving..." followed by "Press SET to change to One-Way" followed by "New ID #####" Do not press SET while is displaying "Press SET to change One-Way". This will time-out after 2 seconds. Note: The one-way option has been disabled. If a CDU is found that still has this menu choice available, please tag it bad order with a note describing the problem.

4	The alarm indicator will flash ON accompanied by 5 beeps from the sonalert and "ID Code Display" will show:	"ID = #####" alternating with "NOT ARMED".
5	The locomotive engineer then alerts the employee at the rear of the train via voice radio to proceed with arming.	The employee at the rear of the train momentarily presses the TEST button on the SBU.
6	When the CDU receives the request to arm message, it prompts the locomotive engineer for a response. The function menu display reads:	"PRESS COMM/ARM TO ARM" for five seconds accompanied by beeps from the sonalert.
7	If the locomotive engineer presses the SET key during the 5 second window, the system will arm and the CDU will then briefly display:	"SYSTEM IS NOW ARMED" The NOT ARMD alarm indication will turn off.
8	If the SET key is not pressed during the 5 second window, or if the SBU doesn't respond as described above, the function menu display will briefly show:	"ARMING FAILED". <u>In this case, the process must be repeated from Step 5 above.</u>

7.3 Entering the Train Length

1	To view the current train length or enter a new one.	Press the MENU UP or MENU DOWN key until the function menu display reads: "Change train length ##### ft"
2	Use the [→] or [←] key to select the digit(s) to be modified. Use the [↑] or [↓] to increment or decrement the selected active digit.	
3	Once the desired train length has been selected:	Press the SET key to store the new value.

7.4 Using the Train Length Distance Function

1	To use the Train Length Function:	Press the MENU UP or MENU DOWN key until the function menu display reads: "TL Distance press SET ". As the lead locomotive passes the initial starting point, press SET and the displayed length will decrement accordingly. The display will always indicate the distance to go before the end of the train is clear of the point to be passed.
2	Press CANCEL key to reset the train distance function.	

7.5 Measuring Distance Travelled Using the Odometer

1	To use the Odometer:	Press the MENU UP or MENU DOWN key until the function menu display reads: "Odometer press SET ".
2	To measure distance:	Press the SET key. The function menu display reads: "Odometer 00000 ft". The 5-digit count is initially set to zero and, as train moves, it begins to count the distance.
3	Press the CANCEL key to reset the odometer function.	

7.6 Calibrating the Odometer Using a Measured Mile

Calibration of the Odometer is used to compensate for locomotive wheel wear and differences in wheel diameter from one locomotive to another. The allowable range of locomotive wheel diameters is 34.00 inches through 46.00 inches. The CDU default is 38.1 inches.

<p>1 To calibrate using a measured mile:</p>	<p>Press the MENU UP or MENU DOWN key until the function menu display reads: "Measured Mile press SET".</p> <p>When the zero mile marker is passed:</p> <p>Press the SET key to begin the measurement. The function menu display reads: "Press SET at End of Mile ##### ft".</p>
<p>2 When the one mile marker is reached:</p>	<p>Press the SET key a second time to mark the end of the mile and to calculate the new wheel size.</p>
<p>3 If the measurement is such that the calculated wheel size falls within the permitted range, the calibration passes and the sonalert will beep once to indicate that the measurement is completed.</p>	<p>For example: If the function menu display reads: "4954 ft, corrected to 5280 ft".</p>
<p>4 However, if the measurement is such that the calculated wheel size falls outside of the permitted range, the calibration fails, the sonalert will beep once, and the</p>	<p>Function menu display reads: Measured Mile FAILED".</p>

7.7 Change Display Panel Brightness

Using menu item "Change Brightness" adjust the display brightness using [**↑**] or [**↓**] keys, accept setting with the **SET** key.

7.8 Change Loudness Sonalert

Using menu item "Change Loudness" adjust the beep loudness using [**↑**] or [**↓**] keys, accept setting with the **SET** key.

8.0 ATX – Air Turbine SBU

8.1 Wabtec *TrainLink*® ATX (CPT3xxxx series) START-UP/SHUTDOWN



The *TrainLink*® ATX ...is equipped with an air turbine generator that operates over a pressure range of about 50 to 125 psi*. It will operate in the same environmental conditions as a standard EOT (SBU).

They also have a built-in battery for backup purposes when the air supply is cut off, which can keep the SBU operating for up to 12 hours on full charge.

□*Note: The *TrainLink*® ATX (Air Turbine) EOTs (SBUs) should not be routinely operated at pressures greater than 100 psi, since this may significantly shorten the projected lifespan of the unit.

Air must be applied to the EOT (SBU) for startup. When air is present on the EOT (SBU), the alternator supplies electrical power and charges the back-up battery.

Note: Upon power up of the ATX SBU, the read out information is different than the existing equipment.

The *TRAINLINK*® ATX will scroll through the following displays on each button press:

- "WRE" Wabtec Railway Electronics.
- "EOT" and then "ATX" are displayed.
- "VERS" X.XX where X.XX is the EOT (SBU) software version.
- "PSI" where XX is the brake pipe pressure.
- "VGEN" where XX is the Air Generator voltage.
- "V" where XX.X is the battery voltage.
- "IBAT" where X.XX is charging current or "NIBA" where X.XX battery sourcing current.

To shutdown the ATX EOT press and hold the test button for 3-5 seconds (pressure must be zero for this feature to be active). The unit will also shutdown automatically when tilted horizontally for 5 minutes.

8.2 Arming the LCU (IDU) in the TrainLink® System

Arming and pre-departure procedures will be identical to present battery powered EOT (SBU) Operations (see item 2.0).

8.3 Disarming the LCU (IDU) in the TrainLink® System

Follow those instructions as outlined in Item 1.8 for various locomotive disarming sequences.

8.4 Wabtec ATX Operation in Winter

In normal operating conditions the ATX SBUs can recharge their backup battery, however the battery's recharging capability diminishes as the temperature drops further below freezing and at extreme cold temperatures below -15C (5F) the SBU will not be able to recharge its backup battery.

It is important that in freezing temperatures below -10C (14F) ATX SBUs are not operated for an extended duration when *the air supply is cut off*, otherwise this would deplete the backup battery and generate "low battery" alarms. The ATX SBU must then be sent to a Radio Shop or Car Shop for recharging on the ATX chargers.

In horizontal or tilted position ATX SBUs shut down automatically in 5 minutes without air pressure. In upright position attached to a car's coupler -- but with no air supply -- it will **not** shut down automatically, it will continue to operate until the backup battery is depleted.

Therefore, **in cold temperatures below -10C (14F) do not let ATX SBUs on the coupler operate for more than an hour when the air supply is cut off. The ATX SBU must be shut down manually** by holding the TEST button for 5 seconds. The SBU will turn on automatically when the air pressure resumes.

9.0 Motion Detector System

9.1 Motion Displays

The display unit will indicate the initial direction of movement with either a small arrow or a light. Forward direction is indicated by a light or by an arrow pointing towards the right of the display unit. Indication of motion/direction will be replaced with a double arrow <> or a light, indicating continuous motion. When the train is stationary, this is indicated by a light or two horizontal bars - - in the motion field.

On locomotives equipped with an IFD, possible indications are FWD, REV, and STOP."

Model 6696 CDU

The display unit will indicate the initial direction of movement with message "FORWARD" or "REVERSE" on "ID Code Display." The message will flash for 10 seconds, then continues steadily for another 10 seconds. The "MOVING" status light will be lit.

10.0 Emergency Braking Feature

To activate the emergency braking feature, lift the red safety cover located on the right side of the display unit and move the EMERGENCY toggle switch upwards. This will cause the EMERGENCY VALVE of the SBU to which the system is ARMED to be activated.

11.0 Communications Test

If communications problems are suspected, continuity may be tested by pressing the COMM TEST button. When the button is pressed a "+" or "reply pending light" will appear briefly. Disappearance of either of these indications verifies continuity of communications. Locomotives equipped with an IFD will display COMM TEST PASSED.

If the "+" symbol, or "reply pending light" remain displayed, the COMM TEST button must be pressed three times in rapid succession. If this fails to overcome the problem the train should be moved one train length and the test repeated.

Model 6696 CDU

If communications problems are suspected, continuity may be tested by pressing the "COMM ARM" button. When the button is pressed a "WAITING FOR REPLY" message is briefly displayed on the "Function Menu Display," followed with brief message "COMM TEST OK."

If the "Function Menu Display" reads "**COMM TEST FAILED**" for 2 seconds, the "COMM ARM" button must be pressed three times in rapid succession. If this fails to overcome the problem the train should be moved one train length and the test repeated.

Note: A manual COMM TEST must be performed at run through locations to verify TIBS is operating as intended.

12.0 Alarms

12.1 The display unit automatically detects and displays alarms accompanied by an audible alarm for the following conditions:

- Rear-to-Front Communications Failure
- Front-to-Rear Communications Failure

Note: After a brief interval, the display will revert to normal pressure display, or accompanied by a; ← or F → R **NO COMM**, and remain until continuity is restored.

- EMERGENCY Valve Circuit Failure

Note: The display will then revert to displaying normal readings, accompanied by either a V or a steady VALV FAIL light.

If any VALV FAIL alarms are experienced, EMERGENCY BRAKING FEATURE must be considered inoperative. Employees will be governed by instructions included in item 19.0.

- No air
- Telemetry battery weak
- Replace telemetry battery
- Replace HVM battery
- Low pressure
- Not armed
- Service, NO DATA or I/O ERR - Any one of these displays indicates that the display unit is faulty and requires servicing by qualified personnel.

12.2 On locomotives equipped with an IFD, possible alarm displays are:

1	EOT COMM	Will light YELLOW when a condition of Front to Rear or Rear to Front communication failure exists; REAR pressure display will show ***(RED) .
2	EOT EMERG STATUS DISABLED	Locomotive engineer take note, another alarm indicator may be lit.

3	EOT BATT	Will light yellow if SBU battery is weak. Will light red if SBU battery is dead; REAR pressure display will show ***(RED) .
4	EOT VALVE	Will light yellow if SBU Valve Circuit fails; REAR pressure display will show ***(RED) .
5	REAR	Last car pressure display WHITE if over 45 psi, last car pressure display RED if below 45 psi.

13.0 Pre-Installation Testing of SBU at Major Terminals:

(Montreal, Toronto, Thunder Bay, Winnipeg, Calgary, Golden and Coquitlam)

- A** - The SBU must be equipped with fully charged batteries and tested to ensure proper operation prior to installing on a train.
- B** - To facilitate testing, major terminals are equipped with an air supply and a test IDU/CLU set. This test equipment will be located in the same area as SBUs are stored.
- C** - Successful performance of the pre-departure tests as posted at storage locations, will be considered as verification that the SBU is operating as intended and may be installed on the train.

14.0 Pre-installation Testing of SBU at Other Than Major Terminals

At locations not equipped with an air source and/or a test CLU/IDU, the following pre-installation tests must be performed to verify the SBU is operating as intended prior to installing on a train.

- A** - Install fully charged batteries.
- B** - Depress the test button and observe the power up sequence of the SBU.
- C** - Ensure the display is not accompanied by "W," "R," "A" or "ROM."

Note: Successful performance of the above is verification that the SBU is operating as intended. The same series of tests, with exception of installing fully charged batteries, must be performed on the SBU when it arrives at the storage location.

15.0 Installation of SBU

When installing an SBU, ensure that the two urethane contact feet are firmly seated against the coupler casting and equally seated above and below the casting holes.

After firmly tightening the clamping screw handle, turn it to the vertical position, close the locking bracket and install a lock or hook.

Prior to making the gladhand coupling, open the rear angle cock slightly to remove any moisture or debris. Connect the SBU gladhand to the brake pipe hose of the rear car and fully open the angle cock.

16.0 Pre-Departure Testing of TIBS

16.1 Pre-departure testing of TIBS will only be performed at the location where the components of TIBS are initially installed on the train. Once a pre-departure test of TIBS has been performed, such test will not be repeated unless one of the components has been changed out.

16.2 Pre-departure testing of TIBS will be performed by train crews and/or other qualified personnel. At locations where this test is performed prior to the train crew coming on duty, the fact that the equipment has been tested shall be documented on the Train Brake Statue form and the crew must record this information on the Crew to Crew form. At locations where the crew performs the test, the crew must record this information on the Crew to Crew form (see example of form filled in).

Pre-departure test procedures for TIBS shall be conducted as follows: (Also see Item 21.0)

A	The head-end crew or other qualified person, must enter the ID Code of the SBU assigned to that train into the display unit.
B	When the air pressure has been applied to the SBU it must be verified that pressure is shown on the display unit.
C	Depress the SBU test button and confirm that pressure is displayed in the viewing window.
D	As soon as the display unit indicates ARM NOW, the person performing the test shall depress the COMM TEST button or ARM 2-WAY switch and verify the display ARMED is given, indicating the display unit is authorized to the SBU assigned to that train.
E	Instruct person on the locomotive to perform a COMM TEST in accordance with item 11.0.

F	After the brake-pipe has been charged to not less than 48 psi., close the angle cock on the lead end of the rear car and verify that the display unit shows pressure.
	Note: It is acceptable to leave rear car angle cock open, but for next step (G) , verify emergency brake application propagates from SBU through to leading locomotive.
G	Instruct the person performing the test to activate the emergency feature and verify that the SBU initiates an emergency brake application on the rear car and that the display unit indicates 0 psi.
H	The EOT (SBU) pressure must remain at 0 PSI for at least 30 seconds before the emergency valve will close and allow the EOT to recover. Failure to do this will result in a “ VALVFAIL ” message at the LCU (IDU). After creating the emergency brake application and all air is exhausted from the brake pipe, the solenoid valve on the SBU will reset (30 Seconds) and air may be reapplied. Open the angle cock on the rear car and confirm that the pressure is again being displayed on the display unit.
	Note: In the application of 3 point protection (minimum application), prior to the angle cock being opened, the engineer must reduce brake pipe pressure to 55 psi (equivalent of a 35 psi reduction) to prevent the possible release of the train brakes. CAUTION: If 3 point protection was applied in a state of false gradient, a undesired release may occur when the air is cut in.
I	Perform the required brake test.
J	At run-through points, pre-departure testing consisting of a COMM TEST, will be made by the outbound crew to verify TIBS is operating as intended.

Example:

Train	Lead Locomotive	Date	TIBS/TE Remote - Emergency Brake Feature
# 401-09	# CP 9510	25 / 12 / 03 DD MM YY	SBU/Remote# 88893 tested by Carman Jones (PLEASE PRINT) at 10:10 Toronto time location

16.3 Pre-departure testing of TIBS on trains with Remote Locomotive on Extreme Rear of Train (If equipped).

A	In the application of item 16.2, after the SBU is armed, <ul style="list-style-type: none"> do NOT close the angle cock on lead end of the remote locomotive at rear of train the employee on the locomotive must ensure the Locotrol console indicates charging flow rates on the remote locomotive(s) is less than 30 cfm.
B	When TIBS emergency feature is activated, the employee on the locomotive must ensure that: <ul style="list-style-type: none"> the TIBS display and Locotrol console both indicate rear brake pipe pressure = 0 psi and that the PC alarm and BV OUT indicators are displayed for the remote locomotive(s), and that the emergency brake application propagates from the SBU through to the leading locomotive.
C	Crew members must confirm with each other that the TIBS emergency feature worked as intended.
D	30 seconds after creating an emergency brake application, the solenoid valve on the SBU will reset; the TIBS test is complete.
E	Recover the emergency brake application on the train as per GOI Section 17, item 17.0.

17.0 Installation of Display Unit

During installation of the Display Unit, the radio circuit breaker must be placed in the OFF position until such time all power and antenna connections have been made.

18.0 Shop Track Tests of Display Unit

18.1 It must be known that the display unit is operating as intended both upon arrival and departure from diesel shops. Test SBUs bearing the test ID code of 00000, are located in diesel shops at major terminals.

Note: On locomotives equipped with an IFD, do not attempt shop track 00000 test.

18.2 To test the display unit, the following series of functions must be performed in the following order:

A	Enter the test ID Code 00000.
B	Place the radio circuit breaker in the OFF position.
C	Place the radio circuit breaker in the ON position.
D	Observe the following sequence of displays; <ul style="list-style-type: none"> DIGITAIR 6650 JXX (e.g.: J20) **** ** displayed with all screens lit (or three dashes - - - in the pressure field.) <p>Note: Prior to transmitting a COMM TEST command, if the Display Unit displays other than listed above, it is indication that another Display Unit is being tested. If this should occur, you must wait for the display to indicate NO AIR prior to transmitting a command from the equipment you are testing.</p>
E	Perform a COMM TEST which will cause the test SBU to be activated and transmit a series of displays and alarms.
F	Once the COMM TEST is initiated, observe the Display Unit, noting that displays and alarms appear in the following order: <ul style="list-style-type: none"> ARMED pressure display of 125 psi and HVM light ON indication pressure display of 100 psi.
G	The EMERGENCY BRAKING FEATURE must be activated immediately upon display of 100 psi. This will cause the following displays: <ul style="list-style-type: none"> a * in the COMM Field and 100 psi. (or reply pending light and 100 psi.) LOW PRES 0 psi Brake Pipe Pressure NO AIR <p>Note: Once the display of NO AIR is given, the display unit is to be considered operating as intended. When departing the shop track the ID CODE of the SBU assigned to that train must be entered.</p>

- 18.3** On trains which originate at locations not equipped with test SBUs, the following test sequence must be performed, to confirm the Display Unit is operating as intended.

A	Set and ARM the display unit to ID Code 00000.
B	Place the radio circuit breaker in the OFF position.
C	Place the radio circuit breaker in the ON position.
D	Observe the following sequence of displays: <ul style="list-style-type: none"> • DIGITAIR • 6650 JXX (e.g.: J20) • **** ** display with all screens lit (or three dashes - - - in the pressure field.) <p>Note: Once the locomotive(s) are on the train, the Display Unit must be ARMED in accordance with items 2.0 and 15.0. At run-through points, a COMM TEST must be performed to verify the TIBS is operating as intended.</p>

19.0 Definitions & Operating Procedures in Event of TIBS Failure

19.1 Scheduled Crew Change Location

A train operating without a manned caboose must not depart a scheduled crew change location if:

A	The display unit fails to display brake pipe pressure.
B	The emergency braking feature is inoperative.
C	The HVM is inoperative. (If so equipped)
D	The batteries are known to be weak.
E	The distance measuring device (DMD) is inoperative.

19.2 Enroute

Note: In this instruction, the words “inoperative enroute” or “TIBS fail” also include situations where an SBU falls off the rear car or is stolen and cannot be recovered or reinstalled.

If **TIBS** fails to display **BRAKE PIPE PRESSURE** and/or the **EMERGENCY BRAKING FEATURE** becomes inoperative enroute, trains **must** be governed as follows:

A	Should TIBS fail and the standard locomotive gauges and Air Flow Indicator indicate no loss of air pressure, the train may proceed at a speed not exceeding 25 MPH until the equipment resumes normal operation or to the next regular crew change point.
----------	--

B	Should TIBS fail and the standard locomotive gauges and Air Flow Indicator indicate a loss of air pressure, the train crew is required to perform a Continuity Brake test. After completion of the Continuity test, the train may proceed at a speed not exceeding 25 MPH until the equipment resumes normal operation or to the next regular crew change point. Note: If a successful Continuity test cannot be performed, the train must not proceed except to clear the main track, until the TIBS is repaired, resumes normal operation or a Continuity test is successfully completed. Such movements shall be made only after appropriate measures have been taken to ensure safety of movement and then only to the nearest location where the main track may be cleared.
C	Train crews must not pick up cars enroute while the display unit is failing to display brake pipe pressure.
D	Do not commence the descent of a mountain grade (greater than 1.8 percent).
E	Do not move from a stop on a mountain grade unless High Pressure Retainers are applied on at least 50 percent of the loaded cars.
Note: The intent of paragraphs (D) and (E) above are for those occasions when TIBS has failed. Paragraphs (D) and (E) do not apply at locations where it is normal to lose communication with the SBU.	

19.3 For the purpose of Items 19.1 and 19.2, the EMERGENCY BRAKING FEATURE must be considered inoperative under the following circumstances:

A	The display of “ VALV FAIL ” or a “ V ” in the valve field or the IFD displays EOT VALVE.
B	A successful COMM TEST cannot be performed in accordance with item 10.0.
C	The display unit indicates a Front to Rear communications failure or the IFD displays EOT COMM.
D	The display unit indicates NOT ARMED.
E	During pre-departure testing of TIBS (items 16.1 or 16.2), activation of TIBS emergency feature will not cause an emergency brake application on the rear car.
Note: If at <i>any time</i> during the trip the display unit indicates “ VALV FAIL ”, or a “ V ” in the valve field or the IFD displays “ EOT VALVE ”, movement is restricted to a speed not exceeding 25 MPH until the SBU has been replaced or repaired.	

19.4 Train crews must immediately notify the RTC of any equipment defects or damage. Conductors must complete Train Information Braking Systems-Exception Report (Form 1225) and turn same in with Form 125 and FAX TIBS exception report to 403 260-5841.

19.5 In the event of a failure of the highly visible marker (HVM), the train will be operated to the next regular crew change location, and there be governed by the instruction outlined in item 19.1.

20.0 Distance Measuring Device (DMD)

20.1 The DMD enables the head-end train crew to determine the location of the rear car of the train in relation to any given reference point at which the counter is activated.

Note: When entering the train length into the DMD, the actual train length must be used, except in non-signalled territory the 3% factor must be used. Should the train length change enroute, due to a pick-up or set-off, crews are responsible to ensure the train length entered into the DMD is adjusted accordingly and such information passed on to succeeding train crews.

20.2 Signs marking out accurate measured miles, are erected on each side of each regular scheduled crew change location, to permit train crews on an outbound train to verify accuracy of the DMD. To verify calibration of the DMD, a crew member will activate the DMD at the designated start of the measured mile ("0" indication sign), and deactivate the DMD at the end of the measured mile ("1" indication sign). Any discrepancies noted in the calibration test must be compensated for by adjusting the train length entered.

Note: Should the DMD become inoperative at any time, the crew must use their discretion and travel extra distance to satisfy themselves the train has cleared any point of restriction and be governed by instructions in item 19.1.

20.3 Using the Odometer portion of the CDU

The ODOM key on SOO equipment controls the odometer feature.

The odometer count appears on the numeric display as the distance travelled in feet. The alphanumeric display indicates that the Odometer is active by displaying ODOMETER.

- The first press of the ODOM key resets it and activates the counter.
- The second press of the ODOM key freezes the count showing the total distance travelled in feet.
- The third press of the ODOM key clears the odometer count and reverts the CDU back to its previous mode (e.g., ID mode).

21.0 Proper Protection Required

When Testing, Installing or Removing an SBU or an SBU Battery

Note: This instruction applies to running trade employees or running trade supervisors.

21.1 Equipment which is coupled to a locomotive:

IF YOU	
1	have personally notified the locomotive engineer of your intentions AND
2	have received confirmation that the locomotive engineer has provided 3 point protection as follows: <ul style="list-style-type: none"> A - Fully applied locomotive brakes and if the air is cut in, made at least a minimum reduction. B - Centered the reverser. C - Opened the generator field switch.
THEN YOU MAY	
3	install or remove the SBU or
4	install or remove the SBU batteries or
5	couple the train brake pipe hose to the SBU or
6	press the SBU test button, and Advise the locomotive engineer when you have completed work on the SBU and are safely in the clear.

21.2 Equipment which is **NOT** coupled to a locomotive:

IF YOU	
1	have personally notified the yardmaster or other employee in charge and
2	have received confirmation that: <ul style="list-style-type: none"> no movement will occur on or into that particular track
THEN YOU MAY	
3	install or remove the SBU or
4	install or remove the SBU batteries or
5	couple the train brake pipe hose to the SBU or
6	press the SBU test button, and Advise the supervisor or other employee in charge when you have completed work on the SBU and are safely in the clear.

21.3 Caution

CAUTION	
	<p>In the application of items 21.1 and 21.2, the employee requesting protection must:</p> <ul style="list-style-type: none"> check for other movements on the track on which he is working, insure that those movements (if any) are stopped, and if necessary, secure with a sufficient number of hand brakes to prevent movement.

22.0 Transportation (Deadheading) of SBUs

21.1 The following applies to the transportation (deadheading) of SBUs on trains, between terminals on CP property.

Note: This does not apply to normal handling while in terminals/yards or local operations.

Numerous CP locomotives are equipped with special SBU brackets for the purpose of transporting SBUs.

- **Transportation of SBUs anywhere in the car body / cab of a locomotive is prohibited** (except in the SBU holder/bracket).
- SBUs must **not be interchanged or sent offline in these holder/brackets** on CP locomotives.

Note: For the purpose of this instruction, trains operating in directional run zones on CN track are not considered as interchanged or offline.

SBU Bracket on a GE Locomotive



End of Train Setup for TIBS EMD Fire Screen

	Action	Result is
LEFT SCREEN		
1	Ensure left screen displays menu with EOT ID option.	
2	Press EOT ID .	End of train identification menu displayed.
3	Press CHANGE EOT ID	
4	Enter SBU # by pressing the keys below the spaces or existing digits.	
5	Press ENTER	IDENT updated on Right Screen.
6	Press COMM TEST	"Comm Test Passed" indicates test successful.
	<i>SBU Test button pressed by another employee.</i>	"ARM EOT" key is displayed.
7	Press ARM EOT within 2-5 seconds after the key displayed.	"EM Enabled" is displayed on Right screen.
8	Press EXIT .	Returns to Main Menu.
9	Comply with remainder of, item 16.2 (steps F through J).	

End of Train Setup for TIBS GE ACs

	Action	Result is
LEFT SCREEN		
1	Ensure left screen displays operational menu with EOT ID option.	
2	Press EOT ID .	EOT keys displayed..
3	Enter SBU # by pressing the keys below the spaces or existing digits.	
4	Press ENTER IDENT	IDENT updated on Right Screen.
	<i>SBU Test button pressed by another employee.</i>	"ARM EOT" key is displayed.
5	Press COMM TEST	"Comm Test Passed" indicates test successful.
6	Press ARM EOT within 2-5 seconds after the key displayed.	"EM Enabled" is displayed on Right screen.
7	Press EXIT .	Returns to Operational Menu.
8	Comply with remainder of, item 16.2 (steps F through J).	

General Operating Instructions (GOI)

Section 7

Train Area Marshalling; Switching;
Equipment and Load Marshalling; and Handling

Train Area Marshalling

1.0	Train Area Marshalling (TrAM) Overview	70
2.0	Definitions	70
3.0	Train Area Marshalling Messages	73
4.0	Verifying Train Area Marshalling	74
5.0	Cushioned Drawbar (CD) Rules	77
6.0	Mixed Train Instructions – Conventional and Distributed Power.....	79
7.0	Distributed Power Train Instructions – All Train Types	80
8.0	Ascending Grade Weight Zone (AGWZ) Rules.....	82
13.0	Speed Restrictions	84
14.0	Heavy Cars and Loads – Authority Required	86
15.0	Switching, Spotting, and Loading	87
16.0	Marshalling Restrictions	90
17.0	Scale Test Cars	93
18.0	Cranes, Combination Crane-Pile Drivers, and High-Rail Cranes.....	95
19.0	Service Equipment Cars – Person in Charge Responsibilities	97
20.0	Service Equipment Cars – Train Crew Responsibilities	98
21.0	Business Cars.....	99
22.0	Business Car Trains	100
23.0	Track Evaluation Cars (TEC) - 63, 64, 65, 68, 424993 & 424994.....	101
24.0	Brake Pipe Run-around Hose.....	102
25.0	Container Traffic - Electric Power Cable Strung Between Cars.....	103
26.0	Handling Continuous Welded Rail (CWR) or Strings of Bolted Rail.....	104
	APPENDIX 1: Train Area Marshalling Messages	107
	APPENDIX 2: Locomotive haulage ratings and equivalent axle counts	110

TRAIN AREA MARSHALLING (TrAM)

1.0 Train Area Marshalling (TrAM) Overview

1.1 Introduction

Train Area Marshalling (TrAM) is CP's system of train marshalling instructions.

TrAM enables CP to operate:

- Heavier trains, and
- Distributed Power trains with a mix of different car types, both loaded and empty.

The TrAM marshalling rules are computer supported.

1.2 TrAM Scope

The Train Area Marshalling instructions include the following:

- Trailing tonnage limits for specific types of car equipment. These limits vary depending on the type of car, length of the car, length of adjacent car, weight of the car (content plus tare), and curvature and grade of the track over which the car will operate.
- Placement of cars with cushioned drawbars.
- Placement of remote locomotive consists.
- Restrictions on the use on dynamic brake.
- Restrictions on placement of light cars on certain ascending grades.

1.3 TrAM Areas

For the purposes of train marshalling, the CP network has been divided into six areas: TrAM Areas 1 to 6.

Specific marshalling instructions apply to each area. Therefore, the relatively restrictive marshalling instructions that apply to trains operating on mountain grades, for instance, do not apply to trains operating in areas of lower grades and curvatures.

Area Descriptions

The TrAM areas are defined by their combination of grade and curvature.

On some subdivisions, the TrAM area differs depending on direction or track.

TrAM areas are indicated in Time Tables.

1.4 Train Consist Enhancement

The train consist provides detailed marshalling messages under the heading Train Area Marshalling Messages. See item 3.0 for an overview of the marshalling messages and Appendix 1 of this section for a list of messages with descriptions.

2.0 Definitions

2.1 General Definitions

- a) **Ascending Grade Weight Zone** – Applies to Mixed, Light Bulk and Light Uniform trains and restricts car or platform weight on the extreme head end. See Item 8.0 for rules and restrictions.
- b) **Cars or Platforms** – When used together, it means conventional car(s) or platforms. "Cars or platforms" is usually used with a number, such as "10 cars or platforms." Conventional cars count as one. Multi-platform cars count by the number of platforms (i.e., a five-pack counts as five).
- c) **Container Slot** – Space for a container on a platform of an intermodal car. Intermodal cars have more slots than platforms. Double stack cars have bottom slots and top slots.
- d) **Cushioned Drawbar** – Designed to dampen the car coupling and in-train forces by using a hydraulic-style car impact cushioning system with longer travel than typical drawbars. Cars that often have cushioned drawbars include:
 - multi-level automobile cars,
 - automobile parts boxcars,
 - centrebeam lumber cars,
 - intermodal flat cars (greater than 80 feet in length and capable of holding two FEUs),
 - flat cars used to ship loads prone to shifting.

Cars that **do not** have cushioned drawbars include:

 - covered hopper cars,
 - hopper cars,
 - gondolas,
 - tank cars.
- e) **Extreme Head End** – First car or cars on the train immediately next to the lead locomotive consist.
- f) **Extreme Rear of Train** – Last car or cars on the train with no other cars trailing except an operating caboose or "crew transportation car." Cannot be ahead of a remote locomotive consist.
- g) **FEU** – Stands for "Forty-foot Equivalent Unit." It refers to a container 40 feet long, or its equivalent. Equivalent means two TEUs, or a single container 40 feet or longer (for example, 45 feet, 48 feet, or 53 feet).

- h) **Maximum Trailing Car Tonnage** – The trailing car tonnage that a car can safely handle in a train. It depends on the type and weight of the car. The maximum trailing car tonnage usually varies by TrAM area.
- i) **Outside Length** – The distance between pulling faces of couplers. It is not stencilled on the car, but can be found on the train consist documents.
- j) **Platform** – Loading area of a car. Conventional cars have one platform. Multi-platform cars typically have 2 to 5 platforms. Intermodal platforms have container slots.
- k) **Remote Zone** – Applies only to Mixed Distr Pwr trains. The Remote Zone restricts car types, and car or platform weights immediately ahead of the remote locomotive consist. See item 7.5 for zone size and restrictions.
- l) **TEU** – Stands for “Twenty-foot Equivalent Unit.” One twenty-foot long container is one TEU.
- m) **Threshold Tonnage** – Maximum train tonnage that can be handled without the possibility of causing a maximum trailing car tonnage violation. Threshold tonnage applies to Mixed Conventional trains and differs by TrAM area. (See item 6.4.)
- n) **Trailing Car Tonnage** – Applies to Mixed trains. On a Mixed Conventional train, the trailing car tonnage is the total weight of all the other cars following that car in the train. On a Mixed Distributed Power train, the trailing car tonnage of cars located ahead of one or more remote locomotive consists is determined by a computer calculation that depends on the position of the remote locomotive consists in the train. The trailing car tonnage of cars located behind the last remote locomotive consist is determined in the same manner as it is for conventional trains.

- o) **TrAM Check** – Computer assisted verification of train area marshalling. When there is a marshalling violation, the crew receives instructions on how to correct or avoid the violation.
- p) **Train** – In these instructions, the term Train can apply to Trains / Transfers or Engines handling equipment.

2.2 Car Type Definitions

- a) **Multi-platform Car** – Any car with two or more platforms.
- b) **Articulated Car** – A car with two or more platforms sharing common inboard trucks.
- c) **Articulated Double Stack Car** – Articulated intermodal container car with 2 or more platforms. They have deep wells that permit double-stacking (i.e., have bottom container slots and top container slots).
- d) **Spine Car** – Articulated intermodal container car with 2 or more platforms. These cars do not have deep wells to permit double stacking (i.e., single-stack, with bottom container slots only).



- e) **Solid Drawbar Connected Car** – A car with two or more platforms that do not share common in-board trucks. Platforms are connected by solid drawbars.
- f) **Solid Drawbar Connected Double Stack Car** – a solid drawbar connected intermodal car capable of handling double stacked containers (i.e., have bottom container slots and top container slots).



- g) **Long-Runner Car** – a solid drawbar connected intermodal car capable of handling up to either three or four trailers. This diagram shows how a long runner car that can handle a maximum of three trailers would be loaded.



- h) **Conventional Car** – Any freight car equipped with two trucks and a standard or cushioned drawbar at each end.

2.3 Train Types

- a) **Conventional Train** – a train in which all operating locomotives are located at the head end of the train.
- b) **Distributed Power (Distr Pwr) (DP) Train** – A train in which operating locomotives are located at the head end of the train, AND in up to 3 additional positions throughout the train. All locomotives are controlled from the head end locomotive consist.

Note: For the purposes of train area marshalling, a train operating with Distr Pwr equipment powered up, but with all operating locomotives at the head end of the train, is considered to be a conventional train. See Section 17, item 2.0 a).

All CP trains are further classified as one of the train types in the following table.

The train type is assigned by the computer and listed in Part 1 - Train Information of the Train Area Marshalling Messages. Each train type is defined in the table below.

Train Type ^{1, 2, 4} (Conventional or Distr Pwr)	ALL cars on the train meet these conditions	
	Weight	Length
Heavy Bulk	<ul style="list-style-type: none"> at least 100 tons (contents plus tare) 	<ul style="list-style-type: none"> 65 feet or less (outside length)
Light Bulk	<ul style="list-style-type: none"> less than 45 tons (contents plus tare) 	<ul style="list-style-type: none"> 65 feet or less (outside length)
Heavy Uniform ³	<ul style="list-style-type: none"> at least 45 tons (contents plus tare) for each car or platform maximum weight difference between cars or platforms is 20 tons 	<ul style="list-style-type: none"> maximum length difference between cars or platforms is 10 feet
Light Uniform	<ul style="list-style-type: none"> 35 to 55 tons (contents plus tare) 	<ul style="list-style-type: none"> 65 feet or less (outside length)
Mixed	Any train that does not qualify as one of the types of Bulk or Uniform Trains listed above.	

Notes:

- If a Bulk or Uniform Train lifts even one car that does not meet the weight and length conditions in the definition, then the train is considered a Mixed Train.
- When a train meets the definition for both Bulk and Uniform train types, the computer assigns the "Bulk" type to the train.
- Heavy Uniform trains may have multi-platform cars, other Bulk and Uniform train types can only have conventional cars.
- Distributed Power trains will be identified in the Train Type line by the addition of the words DISTRIBUTED POWER followed by LEAD + # (# will indicate the number of remote locations)
e.g.: TRAIN TYPE - HEAVY BULK - DISTRIBUTED POWER - LEAD + 2

3.0 Train Area Marshalling Messages

Because the train marshalling instructions are complex, the TrAM rules are computer checked against the actual train consist. Train Area Marshalling Messages are printed on the train consist after the Dangerous Commodity Marshalling Messages.

The main parts of the Train Area Marshalling Messages are:

- Part 1 – Train Information: Provides essential information about the train, such as train type.
- Part 2 – Caution Messages: Provides warnings and information, and sometimes an instruction for the crew (e.g., “obtain NMC authority”), but not marshalling violations.
- Part 3 – Marshalling Violations: Lists marshalling violations that must be corrected before the train can proceed. This part is divided into marshalling messages that apply to **all** areas (“***** ALL AREAS *****”), and marshalling messages that are **specific** for each TrAM area (e.g., “***** AREA 1 *****”). These “specific” messages are listed for TrAM Areas 1 to 6 on all train consists regardless of the TrAM areas in which the train actually operates. Train crews must ensure there are no marshalling violations applicable to the TrAM area(s) in which they will operate.

Example: This train is marshalled correctly to operate in TrAM Areas 1, 2 and 3, because there are “no violations that apply to all areas,” and no area “specific violations” in TrAM Areas 1, 2 and 3. However, this train has “specific violations” that apply to Areas 4, 5 and 6. These marshalling violations would need to be corrected before the train operates in Area 4, 5 or 6.

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PART 3 - MARSHALLING VIOLATIONS
***** ALL AREAS *****
NO VIOLATIONS THAT APPLY TO ALL AREAS
PASSES REMOTE ZONE MARSHALLING
CD RULE 1 - NO CUSHIONED DRAWBAR RESTRICTIONS
***** AREA 1 *****
NO SPECIFIC VIOLATIONS FOR THIS AREA
***** AREA 2 *****
NO SPECIFIC VIOLATIONS FOR THIS AREA
***** AREA 3 *****
NO SPECIFIC VIOLATIONS FOR THIS AREA
***** AREA 4 *****
MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON                                02 CARS
ETTX908301 ETTX803330
***** AREA 5 *****
MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON                                02 CARS
ETTX908301 ETTX803330
***** AREA 6 *****
MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON                                02 CARS
ETTX908301 ETTX803330
*****                               END TRAIN AREA MARSHALLING MESSAGES                               *****

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Appendix 1 provides a complete list of messages that may appear in the Train Area Marshalling Messages portion of the train consist.

4.0 Verifying Train Area Marshalling

4.1 Major Yards, Terminals, and Crew Change Locations

Marshalling Requirement

Supervisors in Major Yards and Terminals are responsible for listing and marshalling trains according to TrAM rules, including tonnage distribution and Remote Zone protection on Distr Pwr trains, and cushioned drawbar rules.

Trains should be marshalled to meet the most restrictive TrAM requirements to the next marshalling point.

Verifying Train Marshalling at a Major Yard or Terminal

Train crews must ensure there are no marshalling violations applicable to the TrAM area(s) in which they will operate the train.

Use the following table to help verify train marshalling.

Step	Action
1	Use the train consist to check: <ul style="list-style-type: none"> • Consist header messages • Car information messages • Train statistics messages • Dangerous Commodity marshalling messages • Train Area Marshalling Messages: <ul style="list-style-type: none"> - Part 1 – Train Information - Part 2 – Caution Messages - Part 3 – Marshalling Violations
2	If there are no marshalling violations, then proceed , but comply with any applicable Train Area Marshalling Caution messages. If there are any marshalling violations that apply to your train on your route, then notify the responsible yard or terminal staff and request instructions.

Verifying Train Marshalling at a Crew Change Location

Pre-departure checks at regular and relief crew change locations should include all of the checks summarized in the table above.

When the make-up of a train has changed without new documents being generated, also check:

- Crew to Crew Information Form under “Other information important to subsequent crews,”
- train consist, and
- Form 125 or appropriate Conductor Report.

If there are any marshalling violations applicable to the TrAM area(s) in which you will operate the train, notify the RTC and request instructions.

If marshalling information is incomplete or missing, and you are unable to determine whether marshalling is correct for the TrAM area(s) in which you will operate the train, then notify the RTC and request a TrAM check.

4.2 En Route Lifts and Setoffs

TrAM check requirements for en route lifts and setoffs (including operating locomotives) are shown in the following table:

Type of Train	Conventional Train	Distr Pwr Train
Heavy Bulk	<ul style="list-style-type: none"> Not required for setoff or lift of operating locomotives. Not required for setoff of cars. Not required for lift of cars if it is known that cars being lifted meet requirements of a Heavy Bulk train, otherwise requirements for a Mixed Conventional train apply. 	Required *
<p>* Note: When lifting a Heavy Bulk train from customer tracks at origin, where exact order of cars may not be known in advance, crew will be instructed where to place the remote locomotive consist(s) in the train, based on number of cars from head end or rear of train. When remote locomotives are placed in train in accordance with these instructions, train will be considered to have passed a TrAM check, with no restriction on the use of dynamic brake.</p>		
Light Bulk	<ul style="list-style-type: none"> Not required for setoff or lift of operating locomotives. Not required for setoff of cars. Not required for lift of cars if it is known that cars being lifted meet requirements of a Light Bulk train, otherwise requirements for a Mixed Conventional train apply. Crews remain responsible to ensure that AGWZ rules concerning trains with more than 24 equivalent driving axles are complied with (see item 8.2). 	Required
Heavy Uniform	<ul style="list-style-type: none"> Not required for setoff or lift of operating locomotives. Not required for setoff of cars. Requirements for a Mixed Conventional train apply when lifting cars. 	Required
Light Uniform	<ul style="list-style-type: none"> Not required for setoff or lift of operating locomotives. Not required for setoff of cars. Requirements for a Mixed Conventional train apply when lifting cars. Crews remain responsible to ensure that AGWZ rules concerning trains with more than 24 equivalent driving axles are complied with (see item 8.2). 	Required
Mixed	<ul style="list-style-type: none"> Not required for setoff or lift of operating locomotives. Not required for setoff or lift of cars, if it is known that total train weight after setoff or lift does not exceed threshold tonnage for the TrAM area in which the train is being operated (see item 6.4). Train must also comply with item 5.3 with respect to Cushioned Drawbar cars on train. Note that item 5.3 may require a TrAM check to be obtained even if not otherwise required by this item. If TrAM check not received, train crews are responsible to ensure that no long car/short car violations occur (see item 6.2). Crews remain responsible to ensure that AGWZ rules concerning trains with more than 24 equivalent driving axles are complied with (see item 8.2) 	Required

4.3 Documenting Equipment Lifts and Setoffs

The following table summarizes crew documentation after lifting or setting off en route.

Lift or Setoff	Documentation
Planned lift or setoff	Leave updated documents with train.
Unplanned lift or setoff, including bad order setoff	Document on the Crew to Crew Information Form under “Other information important to subsequent crews,” noting whether train required a TrAM check (see item 4.2), and if so whether it passed the TrAM check and AGWZ Rules (if applicable) after lift or setoff.
Locomotives	When lifting, setting off, or isolating lead or remote locomotives, or cutting traction motors in or out, document on the Crew to Crew Information Form, Part 1. If remote locomotives were lifted, set off or isolated, document whether train received a TrAM check and if so whether it passed the TrAM check.

4.4 En route Train Area Marshalling Violations

In the event a TrAM marshalling violation is discovered while a train is en route, the train must be stopped and NMC contacted. The NMC will provide instructions to the crew on how to remarshall the train to remove the marshalling violation, and, if the train is able to be moved before the marshalling violation is corrected, what restrictions will apply to movement of the train. When stopping, consideration must be given to prevent blocking of crossings, siding switches, etc.

Note: If authority is received from the NMC to move a train with a marshalling violation, it may only be moved to the first location where the marshalling violation can be corrected.

5.0 Cushioned Drawbar (CD) Rules

5.1 Where cushioned drawbar rules apply

Cushioned drawbar rules apply in all TrAM Areas.

5.2 Cushioned Drawbar Rules

All trains are subject to one of three cushioned drawbar rules, as shown below. The computer system checks each train consist to determine which rule applies.

CD Rule 1: Train may operate with no restrictions related to cushioned drawbars. The following Train Area Marshalling Message will appear on train consist:

CD RULE 1 - NO CUSHIONED DRAWBAR RESTRICTIONS

CD Rule 2: Under certain train make-up conditions, trains handling cushioned drawbars will be speed restricted at specific locations. The locations of speed restrictions will be shown in time table footnotes. Train crews are responsible to apply cushioned drawbar speed restrictions when these are applicable. The following Train Area Marshalling Message will appear on train consist when cushioned drawbar speed restrictions apply:

CD RULE 2 - CUSHIONED DRAWBAR SPEED RESTRICTIONS APPLY

CD Rule 3: Train has a prohibited configuration of cushioned drawbar cars, and/or the last remote locomotive consist on a Distr Pwr train does not comply with marshalling rules. The train must be remarshalled or reduced before proceeding. One or more of the following Train Area Marshalling Messages will appear on train consist:

CD RULE 3 - CUSHIONED DRAWBAR CARS EXCEED MAXIMUM - REDUCE

CD RULE 3 - INSUFFICIENT CD CARS NEAR REAR OF TRAIN - REMARSHALL

CD RULE 3 - REMOTE LOCO INCORRECTLY PLACED FOR OVER 40 CD CARS

5.3 Application of Cushioned Drawbar Rules

The following tables summarize the application of the cushioned drawbar rules based on the number of cushioned drawbar cars on the train and train weight. The first table may be used when lifting cars on a conventional train and no new train consist is available. (See item 4.2)

When a table entry indicates:

- CD Rule 1 or CD Rule 2; or
- CD Rule 2 or CD Rule 3,

may apply, it is the distribution of cushioned drawbar cars on the train that determines which of the two rules will apply. This distribution is computer checked against complex rules that take into consideration the weight and location of cars with and without cushioned drawbar in the train. As a general rule, the fewer non-cushioned drawbar cars that are located at or near the rear of the train, the more likely the less restrictive of the two rules will apply.

Conventional Trains		
Number of cars with Cushioned Drawbars	Train Weight	Application of Cushioned Drawbar Rules
0 to 30	Any weight	CD Rule 1 applies.
31 to 80	5000 tons or less	If it is known that train is in this category, and train consist not available, a TrAM check for cushioned drawbars is not required.
	Over 5000 tons	Either CD Rule 1 or CD Rule 2 applies, as indicated on train consist. If it is known that train is in this category and no train consist available, CD Rule 2 will apply unless a TrAM check received indicating that CD Rule 1 applies.
81 to 120	Any weight	Either CD Rule 2 or CD Rule 3 applies, as indicated on train consist. If train may be in this category and no train consist available, a TrAM check must be received before proceeding. Exception: If all cars are equipped with cushioned drawbars, CD Rule 2 applies and TrAM check for cushioned drawbars is not required.
Over 120	Any weight	CD Rule 3 applies

Distributed Power Trains		
Number of cars with Cushioned Drawbars	Train Weight	Application of Cushioned Drawbar Rules
0 to 40	Any weight	CD Rule 1 applies.
41 to 80	6000 tons or less	Either CD Rule 1 or CD Rule 3 applies, as indicated on train consist.
	Over 6000 tons	CD Rule 1, CD Rule 2 or Rule 3 may apply, as indicated on train consist.
81 to 120	Any weight	Either CD Rule 2 or CD Rule 3 applies, as indicated on train consist.
Over 120	Any weight	CD Rule 3 applies

Note: Distributed Power trains require a TrAM check – see item 4.2.

6.0 Mixed Train Instructions – Conventional and Distributed Power

These instructions apply to Mixed Conventional and Mixed Distributed Power Trains ONLY.

6.1 Marshalling Heavy and Light Cars or Blocks

To reduce undesirable track/train dynamics in Mixed trains, apply the following marshalling instructions, subject to destination blocking.

Heavy Cars and Blocks

- Marshall heavy cars as close as possible to the head end.
- Do **not** marshall heavy blocks of cars to the rear of train unless blocks of cars ahead are equally as heavy.

Light Cars and Blocks

- Marshall light cars or blocks as close as possible to the rear, unless the cars behind are also relatively light.

Notes:

1. The Train Area Marshalling Messages **do not** indicate whether train marshalling fulfills the intent of this item.
2. Destination blocking does not take precedence over TrAM marshalling violations that are shown on the train consist.

6.2 Short Car Coupled to Long Car (32/65 Rule and 41/80 Rule)

A car with an outside length less than 32 feet must not be coupled to a car or platform greater than 65 feet in outside length.

A car with an outside length less than 41 feet (other than operating cabooses or “crew transportation cars”) must not be coupled to a car or platform greater than 80 feet in outside length.

When either of these rules is violated, a message appears in the “All Areas” portion of Part 3 – Marshalling Violations of the train consist.

Exception: Cranes coupled to Idler cars are exempt from this item, and any short car/long car violation message in Part 3 related to the crane/idler combination does not apply.

All speed restrictions shown in item 18,1 continue to apply.

6.3 Maximum Trailing Car Tonnage for Cars Greater than 65 Feet in Outside Length

On Mixed trains there is a maximum trailing car tonnage for all cars greater than 65 feet in outside length. The maximum trailing car tonnage varies by TrAM area, by car type, and weight. Part 3 of the Train Area Marshalling Messages lists, by TrAM area, cars that have more than the allowable maximum trailing car tonnage. (See example in item 3.0.)

A train cannot be operated in a TrAM area in which maximum trailing car tonnage violations are listed. Cars must be re-marshalled or set off before the train may proceed in that TrAM area.

6.4 Threshold Tonnage

When the train tonnage is lighter than the threshold tonnage, maximum trailing car tonnage violations will **not** occur. Threshold tonnages vary by TrAM area and are listed in the following table and apply to Conventional Trains only.

TrAM Area	Threshold Tonnage
	Conventional Trains
1	9550 tons
2	8000 tons
3	4200 tons
4	6000 tons
5	2800 tons
6	3500 tons

7.0 Distributed Power Train Instructions – All Train Types

See Section 17, Distributed Power, for additional instructions not covered by Section 7.

Note: For the purposes of TrAM, conventional train instructions apply when operating with all locomotives on the head end as described in Section 17, Item 2.0 a).

7.1 Lead and Remote Locomotive Consist Combinations

TrAM supports Distributed Power operations with up to 3 remote locations through the train. The permitted combinations of **operating** lead and remote locomotives is based on equivalent driving axles. A consist message in Part 3 – Marshalling Violations displays "Locomotive capacity exceeds maximum" followed by the location (i.e. Lead / Remote 1) when the number of operating locomotives in either the lead or remote locomotive consists exceeds the number permitted. The violation can be corrected by isolating or removing locomotives.

Note: Due to the risk of high in-train forces, if there is a locomotive failure on any remote consist, the RTC must be notified and a TrAM check performed

The table in Appendix 2 is used to determine equivalent driving axes.

Maximum Driving Axles – Distr Pwr Trains			
Train Type	Lead Consist	In Train Remote(s)	Remote (extreme rear)
All train types except Heavy Bulk	24	24	12
Heavy Bulk	30	24	

7.2 Remote Locomotive Consist Placement

The placement of the remote locomotive consist(s) depends on the distance (in feet and number of cars or platforms) between the lead and remote locomotive consist(s) as well as the percentage of total train weight behind the remote locomotive(s).

Standard examples for the distribution of remote locomotives in a Heavy Bulk train that minimize in-train forces will be provided for locations where remote locomotives are normally added to Heavy Bulk trains. This does not eliminate the requirement for a TrAM check.

7.3 Maximum Distance between Lead and furthest Remote Locomotive Consist

Maximum distance	10,000 feet
All locomotives in the remote consist(s) are placed in IDLE mode	No maximum ¹
Note: 1. Under this condition, the train is considered to be a conventional train and a TrAM check may be required. (See item 4.2)	



Note: The maximum distance requirement is based on the ability to perform a comm loss idle down of the remotes when the train is operating in a state of "Comm Loss" as indicated in Section 17 Item 5.0. It is **not** based on radio communication.

7.4 Dynamic Brake

The TrAM system will determine the maximum allowable dynamic brake force on distributed power trains. When use of Dynamic Brake is not restricted, the following TrAM message will appear in Part 1:

DYNAMIC BRAKE NOT RESTRICTED

When use of Dynamic Brake is restricted, instead of cutting out dynamic brakes, locomotive engineers will be directed by TrAM message to restrict dynamic brake force to nnn in thousands of pounds as per the effort indicator on the locomotive display. In such case, the following TrAM message will appear in Part 2:

DYNAMIC BRAKE RESTRICTED - DO NOT EXCEED nnn KLBS RETARDING FORCE

7.5 Remote Zone – Mixed Distributed Power Trains ONLY

These rules apply to Mixed Distributed Power Trains ONLY.

On Mixed Distributed Power trains, the cars immediately ahead of the remote locomotive consist(s) form the Remote Zones.

The TrAM system will analyze the equipment ahead of each remote location to verify that the train passes Remote Zone Rules.

For a Mixed Distr Pwr train, in Part 3 of the Train Area Marshalling Messages on the train consist there will be a message that indicates one of the following:

- that train passes remote zone marshalling, or
- that specific cars have failed remote zone marshalling, or
- that remote zone rules do not apply. (See Exception below)

Cars that fail remote zone marshalling must be remarshalled or set off before train proceeds.

Exception: The Remote Zone rules do **not** apply to a Mixed Distr Pwr train when **both** of the following conditions are met:

- a) All cars on the train, except cars on the extreme head end, meet the conditions of a Light Bulk train or a Light Uniform train. (The "extreme head end" in this case includes all cars up to and including the car furthest from the head end that does not meet the conditions of a Light Bulk or Light Uniform train, as the case may be.)
- b) The number of cars or platforms on the "extreme head end" as defined in paragraph a) does not exceed 10% of the total number of cars or platforms between the lead and first remote locomotive consist.

7.6 Buff and Draft Forces on Distributed Power Trains

With multiple remote locomotives in a train, the total tonnage of a train will be divided between each locomotive grouping. Depending on the tonnage in each section of train (between locomotive groups), locomotives could be generating draft (pulling), buff (pushing) or a combination of both forces.

TrAM will calculate each section of train tonnage based on the Haulage Factor of all locomotives on the train and the tonnage of that portion of the train.

When draft or buff forces are exceeded, TrAM messages will appear in Part 3:

DRAFT FORCES EXCEED MAXIMUM LEAD REMOTE 1 REMOTE 2 REMOTE 3

BUFF FORCES EXCEED MAXIMUM REMOTE 1 REMOTE 2 REMOTE 3

8.0 Ascending Grade Weight Zone (AGWZ) Rules

- 8.1 At certain locations in TrAM Areas 4 and 5, the combination of severe ascending grades and curvature can create undesirable in-train forces that affect all lighter weight cars under certain operating conditions. These locations are referred to as Ascending Grade Weight Zones. See item 8.5 for the locations of Ascending Grade Weight Zones.
- 8.2 Certain train types operating in Ascending Grade Weight Zones must comply with the following additional marshalling restrictions. Heavy Bulk trains are not affected by the Ascending Grade Weight Zone Rules.

Conventional Trains			
Train Type	Up to 24 Equivalent Driving Axles ² - Any Tonnage	More than 24 Equivalent Driving Axles ²	
		Not more than Threshold Tonnage for a Mixed Conventional Train (item 6.4)	Greater than Threshold Tonnage for a Mixed Conventional Train (item 6.4)
<ul style="list-style-type: none"> • Mixed 	Ascending Grade Weight Zone restrictions do not apply		Cars or platforms on extreme head end must pass minimum weight requirement shown in item 8.3
<ul style="list-style-type: none"> • Light Bulk¹ • Light Uniform¹ 	Ascending Grade Weight Zone restrictions do not apply		Prohibited
<ul style="list-style-type: none"> • Heavy Uniform¹ 	Ascending Grade Weight Zone restrictions do not apply		Prohibited, unless it is known that extreme head end of train complies with requirements of item 8.3
Distributed Power Trains			
If maximum Buff and Draft forces are not exceeded anywhere on the train, the train complies with AGWZ Rules. Excessive Buff and Draft forces, if applicable, are shown in Part 3 of TrAM Messages.			

Note 1: Crews are responsible to ensure that Light Bulk, Light Uniform and Heavy Uniform Conventional trains do not operate in an AGWZ in violation of these requirements. There will NOT be any TrAM message concerning AGWZ for these types of trains.

Note 2: See Appendix 2 for equivalent driving axle counts.

- 8.3 Cars or platforms on the extreme head end of Mixed Conventional trains affected by Ascending Grade Weight Zone Rules (see item 8.2) are restricted as follows:

TrAM Area	Extreme head end of Train ¹
4	First 10 cars or platforms must each have a minimum weight of 60 tons
5	First 12 cars or platforms must each have a minimum weight of 75 tons
	OR First 15 cars or platforms must each have a minimum weight of 60 tons
Note 1: When an articulated or solid drawbar connected car extends beyond the first 10, 12 or 15 cars or platforms as required in this table, the minimum weight rules apply to each platform on that car.	

8.4 TrAM Messages and Crew Responsibility

Part 3 of the Train Area Marshalling Messages, Areas 4 and 5, will indicate, for Mixed Conventional trains only, whether or not the cars or platforms on the extreme head end of the train meet the minimum weight requirements for operation with over 24 equivalent driving axles in an Ascending Grade Weight Zone.

When operating in an Ascending Grade Weight Zone, crews are responsible to ensure that the number of equivalent driving axles on their train does not cause a violation of the Ascending Grade Weight Zone Rules. TrAM messages do NOT state if the train is operating with too many equivalent driving axles for that train configuration in an Ascending Grade Weight Zone.

8.5 Locations of Ascending Grade Weight Zones

Service Area	Subdivision and TrAM Area	Ascending Grade Weight Zone Located between	Direction
BC Interior	Mountain Area 5	Albert Canyon and Glacier	Eastward
		Fraine and Stoney Creek (Connaught Track)	Westward
Alberta	Laggan Area 5	Hill and Field	Eastward
		Field and Divide	Eastward

9.0 This item number is reserved for future TrAM instructions

10.0 This item number is reserved for future TrAM instructions

11.0 This item number is reserved for future TrAM instructions

12.0 This item number is reserved for future TrAM instructions

SPEED RESTRICTIONS

Refer also to operating bulletins and subdivision footnotes under the heading "EQUIPMENT RESTRICTIONS."

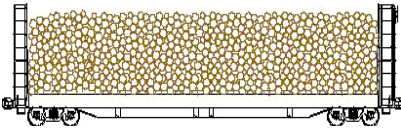
DEFINITION:

"Authorized Freight Train Speed or Freight Train Speed" is defined as the lowest of the following speeds:

- maximum subdivision speed for that train;
- permanent speed restriction;
- temporary speed restriction account track condition.

13.0 Speed Restrictions

Use the following table to identify speed restrictions for various kinds of loads and equipment.

Speed Restrictions for Various Equipment			
	Equipment Type	Must NOT Exceed...	Additional Information
A.	Business Car Train	50 MPH	See item 22.1. Freight train speed not exceeding 50 MPH (notification provided on consist)
	Passenger Equipment	Passenger Train Speed as indicated in Time Table	Unless otherwise advised or restricted by operating agreement, applies to Passenger Train equipment (other than CP Business cars) such as GO, Via, AMT, Amtrak, West Coast Express, Rocky Mountaineer..etc.
B.	Business Cars handled on Freight Trains	50 MPH	See item 21.2. Freight train speed not exceeding 50 MPH (notification provided on consist)
C.	Bulkhead flats: a) empty	45 MPH	When required - Notification provided on consist as well as when these cars are lifted en route. Exception: Authority to exceed 40 MPH may be secured from the Director Operations – NMC if able to confirm that the crossways loaded logs have been loaded as per AAR Open Top Loading Rules Fig. 11-C (Rev.9/94) (NOT shown).
	b) loaded crossways with pulp wood or other logs Example: 	40 MPH	
D.	Cranes, Combination crane-pile drivers, and other similar equipment.		See item 18.1.
E.	CWR and Strings of Bolted Rail		See item 26.1 (when operating on CP) and 26.2 (when operating on CN).
F.	Gondola cars – empty	50 MPH	Notification provided on consist as well as when these cars are lifted en route.

Continued on next page...

Speed Restrictions for Various Equipment			
	Equipment Type	Must NOT Exceed...	Additional Information-
G.	Freight Trains	50 MPH	Restriction applies when: <ul style="list-style-type: none"> the gross weight of the train including locomotives exceeds 4000 tons; AND weight per operative brake is 115 tons or greater. Part 1 of the Train Area Marshalling Messages displays weight per operative brake. <p>Note: This item does not apply on the CN Yale Subdivisions.</p>
	Freight Trains	30 MPH	When specified by GBO or DOB to apply while passing business cars, or occupied service equipment.
H.	48 foot Open Hopper Cars in MSDR series – empty	50 MPH empty	
I.	Occupied Service Equipment	35 MPH	Except as outlined in item 20.4.
J.	Ore Cars: <ul style="list-style-type: none"> series CP 370000 to 377249 foreign cars 30 feet and less outside length 	50 MPH loaded 40 MPH empty	
K.	Scale Test Cars		See item 17.1.
L.	Snowplows and Spreaders handled deadhead Note: When operating, speed will be at the direction of the Track Maintenance Supervisor but not exceeding authorized freight train speed.	35 MPH, handled in direction of travel.	If it is not possible to handle the snowplow or spreader in the direction of travel, then the train speed must not exceed 25 MPH.
M.	TEC (Track Evaluation Cars)		For TEC equipment on freight trains, see item 23.3.

HEAVY CARS AND LOADS

Refer also to operating bulletins and subdivision footnotes under the heading "EQUIPMENT RESTRICTIONS."

Also see item 15.0 for switching, loading, and spotting restrictions; and see item 16.0 for marshalling restrictions.

14.0 Heavy Cars and Loads – Authority Required

Note: See Section 10 item 2.2 e) for overloaded cars.

14.1 Cars Exceeding Maximum Standard Weight

A Protection Notice or authority from the Director Operations - NMC must be obtained for the following cars:

- car (less than 42 feet) exceeding 268,000 pounds
- car (42 feet or longer) exceeding 286,000 pounds.

14.2 Articulated Multi-platform Cars

- a) Restrictions are specified in subdivision footnotes for movement of articulated multi-platform cars having a content weight on ANY platform up to **106,000 pounds**.
- b) Unless authorized by Protection Notice, authority must be secured from the Director Operations - NMC for movement of articulated multi-platform cars:
 - having a content weight on ANY platform in excess of 106,000 pounds; or
 - having a content weight on ANY platform in excess of 118,000 pounds (when equipped with 125 ton trucks).

Note: See item 2.2 for the definition of articulated multi-platform cars.

14.3 Solid Drawbar Connected Multi-platform Cars

- a) Restrictions are specified in subdivision footnotes for movement of solid drawbar connected multi-platform cars having a content weight on ANY platform up to **173,000 pounds**.
- b) Unless authorized by Protection Notice, authority must be secured from the Director Operations - NMC for movement of stand-alone multi-platform cars having a content weight on ANY platform in excess of 173,000 pounds.

Note: See item 2.2 for definition of solid drawbar connected multi-platform cars.

SWITCHING, SPOTTING and LOADING

15.0 Switching, Spotting, and Loading

15.1 Coupling Cars Safely

Maximum coupling speed is 4 MPH (unless further restricted elsewhere). To prevent damage to equipment and lading, couple while moving at the slowest speed possible.

Do not attempt to couple a car or locomotive to another piece of equipment, unless the couplers are in line with each other. When it is necessary to adjust a mismatched coupler, follow this procedure. (See also Transportation Field Operation Safety Rules and Work Procedures.)

Step	Action
1	Stop the movement.
2	Allow a safe distance, not less than 50 feet , for working room between equipment. (Whenever necessary, signal locomotive engineer to reverse the movement and stop a second time to obtain a safe amount of room).
3	Wait for: <ul style="list-style-type: none"> the movement to come to a complete stop, and the slack to adjust and settle. (Do not overlook unexpected movements resulting from liquids sloshing in tank cars.)
4	<p>Before fouling the track or making a movement between equipment to adjust knuckles, adjust drawbars, or couple brake pipe hoses, request the locomotive engineer establish three point protection.</p> <p>Three Point Protection – Locomotive Engineer:</p> <p>To establish 3 point protection, complete the following steps in sequence.</p> <ol style="list-style-type: none"> Fully apply locomotive brakes and if the air is cut in, make at least a minimum reduction. Centre the reverser. Open the generator field switch. <p>Then the locomotive engineer will:</p> <ol style="list-style-type: none"> Notify the requesting employee that three point protection is provided. Maintain three point protection until the employee requesting it advises that he is clear and that protection is no longer necessary. <p>To remove 3 point protection, complete the following steps in sequence.</p> <ol style="list-style-type: none"> Close the generator field switch. Move the reverser out of neutral. Release the locomotive brakes. <p>Then the locomotive engineer will:</p> <ol style="list-style-type: none"> Confirm that three point protection is removed.
5	Inspect cars not attached to the locomotive to ensure that they are stopped, and if necessary, secure with a sufficient number of hand brakes to prevent movement.
6	Check for other movements on the track on which you are working.
7	Make the necessary adjustments (to drawbars/couplers) following safe work procedures.
8	Step clear of the equipment. (Do not foul adjacent track.) Notify the locomotive engineer to continue with the coupling.
9	After coupling, slack must be taken or be seen to run out, to ensure a proper coupling has been made.
Note	When switching using RCLS (Remote Control Locomotive System), refer to RCLS Job Aids on RailCity or the Internet.

15.2 Switching Restrictions and Precautions - Equipment

Use the following table to identify switching restrictions for specific equipment.

Refer to Section 8, Dangerous Goods, and Section 10, Dimensional Traffic, for additional restrictions.

Switching Restrictions – Types of Equipment		
	Equipment	Switching Restrictions and Precautions
A	Service Equipment	See item 20.3
B	Cars over 65 feet (outside length), including Multi-level autos	Whether loaded or empty: <ul style="list-style-type: none"> • Couple to other cars on straight track (when possible). • Follow the steps in item 15.1, Coupling Cars Safely, to properly align coupler heads before coupling. • Shove fully clear of adjacent tracks before being uncoupled. In addition, loaded multi-level automobile cars should not be hung onto during switching.
C	Multi-platform cars	a) When loaded or empty: <ul style="list-style-type: none"> • Do not hump or cut off in motion. • Do not allow to be struck by a car moving under its own momentum. • Do not couple onto with more force than necessary to complete the coupling. b) In addition, when loaded with one or more trailers or containers: <ol style="list-style-type: none"> 1. Stop between 12 and 6 feet from a stop block or from the equipment being coupled onto. CAUTION: If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely. 2. Couple with care to avoid damage to lading.
D	Two axle scale test cars	See item 17.3.
E	TEC (Track Evaluation Car)	See item 23.4.
F	Cuts of 20 or more cars	When cuts of 20 or more cars are subject to damage from overspeed impact: <ol style="list-style-type: none"> 1. Stop between 12 and 6 feet from the cars to be coupled. (CAUTION: If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely.) 2. Couple with care to avoid shock.
G	SBU (Sense and Braking Unit)	Remove the SBU before lifting or setting off cars from the rear of the train.

15.3 Switching Restrictions and Precautions - Loads

Use the following table to identify switching restrictions for specific loads.

Refer to Section 8, Dangerous Goods, and Section 10, Dimensional Traffic, for additional restrictions when switching those kinds of loads.

Switching Restrictions – Types of Loads		
	Load	Restrictions and Precautions
A	<ul style="list-style-type: none"> • Transformers • Circuit Breakers • Traction Motors • Wheelsets 	Do not hump. Always switch with locomotive attached.
B	CWR or Strings of bolted rail	See item 26.3.
C	Trailers or Containers	Trailers and containers should not be: <ul style="list-style-type: none"> • humped or cut off in motion; or • struck by a car moving under its own momentum. Caution: If these actions cannot be avoided, then ensure the movement, and following movements, are properly controlled.
D	Bridge girders, pipe, poles, or similar lading	When loaded on three or more flat or gondola cars: <ul style="list-style-type: none"> • Do not hump or cut off in motion.
E	Prone to shifting and subject to damage	Use extreme care when switching commodities subject to damage, especially when cars are partly loaded or unloaded. (E.g., shed, team, or industrial tracks)

15.4 Spotting Multi-level Automobile Cars at Automobile Compound Ramps

- a) Before placing the car against the stop block, stop the car between 12 and 6 feet from the stop block. (**CAUTION:** If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely.)
- b) Set hand brakes on all cars.
- c) Do **not** couple together multi-levels that have over 3 inches difference in deck heights

Use the following table to determine the distance between railcars.

Bridge Plate Length	Distance between railcars
53 inch	Position multi-level car with 38 to 46 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
56 inch	Position multi-level car with 41 to 49 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
Adjustable length	Position multi-level car with 38 to 56 inches between the centre point to centre point of the barrel rings on adjacent multi-level cars. Do not compress or extend cushioned couplers to attain this distance.

15.5 Spotting Cars Loaded with Trailers at Unloading Ramps

Complete the following actions when spotting cars loaded with trailers at unloading ramps.

- a) Stretch slack.
- b) Apply hand brakes.
- c) If there is a ramp coupler, test to ensure coupling is made to the ramp.

15.6 Loading Bridge Girders, Pipe, Poles, or Similar Lading on Ferries or Barges

- a) Load when the aprons are as level as possible.
- b) After loading, carefully examine blocking and tie down fastenings.

MARSHALLING EQUIPMENT AND LOADS

16.0 Marshalling Restrictions

These marshalling restrictions describe where particular loads and equipment may be placed in a train. See item 13.0 for speed restrictions and item 15.0 for switching, loading and spotting restrictions.

Note: These Marshalling Restrictions are in addition to Train Area Marshalling.

16.1 Marshalling Restrictions – Equipment

Use the following tables to identify marshalling restrictions for various kinds of equipment.

Marshalling Restrictions – Equipment		
	Equipment Type	Instructions to Marshall in FREIGHT TRAINS
A	Multi-Level Autos – LOADED	Marshalling loaded multi-level autos: <ul style="list-style-type: none"> • Do NOT place immediately behind open top cars containing coal, sand, gravel, sulphur, or similar commodities. • Separate from these open top cars by at least 1 closed type car, when practicable.
B	Snowplows and Spreaders handled deadhead	a) Marshall at the extreme rear of train, or immediately ahead of operating caboose (where provided). b) Run in the direction of travel. <ul style="list-style-type: none"> • If not possible to run in the direction of travel: <ul style="list-style-type: none"> ▪ wings must remain properly secured; ▪ snow must not pack behind wings during movement; ▪ snow-plow or spreader must be turned at first available wye or turntable. c) Do not marshall "nose to nose" account limited clearance on curves. d) See Speed Restriction Chart, item 13.0.
C	Cranes, Combination crane-pile drivers, and other similar equipment.	See item 18.2.
D	Scale Test Cars	See items 17.4 and 17.5.
E	Service Equipment	See item 20.4.
F	Mechanical Test Car 66	a) When marshalled in the front half of a train, or in the lead consist, the locomotives allowed ahead of car 66 are a maximum of: <ul style="list-style-type: none"> • 2 DC, or • 1 AC. Note: When marshalled at the direction of Mechanical Services in the lead locomotive consist, with only one AC locomotive operating ahead of Car 66, a TrAM check not required as per item 11.2 (Extreme Head End). b) When marshalled in the remote consist in any position only one AC locomotive is allowed ahead of car 66. c) Do not handle as last car on a train, unless a special adapter is available to mount an SBU.
G	TEC Equipment	See item 23.7.
H	Caboose, and Crew Transportation Car 422988 (Occupied or Unoccupied)	Trailing car tonnage must not exceed 2500 tons. Note: Train Area Marshalling messages do not indicate when trailing car tonnage exceeds this maximum. This item also applies to Caboose that have been modified for use by other departments.

Marshalling Restrictions – Equipment		
	Equipment Type	Instructions to Marshall in FREIGHT TRAINS
I	Business cars	See item 21.2.
J	***BAD ORDER***	<p>A train receiving this Car Movement Restriction Message (CMRM) on any of the following documents:</p> <ul style="list-style-type: none"> • Work Order, • Car Handling Report, • Outbound Wheel Report or • Tonnage Profile <p>Indicates car(s) have Mechanical defect(s) and subject car(s) must not be lifted or moved unless instructions are received from the RTC that car(s) are safe to travel, these instructions may or may not include Restrictions or Special Handling information. In some cases, a Mechanical Services (MS) employee may provide the required handling instructions directly to the crew.</p> <p><u>In all instances</u>, the train crew must record the handling information received from either the RTC or MS employee on the Crew to Crew form.</p>
K	B/O, SAFE TO TRAVEL	A train receiving this Car Movement Restriction Message (CMRM) has a Bad Order car that has been deemed safe to travel by Mechanical Services, and can/must be handled on the train, in accordance with the CMR Messages received.
L	Rotary Couplers	When enroute, rotary couplers must not be coupled to each other, unless it is confirmed that one of the couplers has been secured to prevent it from turning.

16.2 Marshalling Restrictions – Loads

Use the following table to identify marshalling restrictions for various kinds of loads. When handling placarded cars, see also Section 8, item 6.0, Marshalling.

Marshalling Restrictions – Loads		
	Load Type	Instructions
A	CWR, or Strings of bolted rail	See item 26.4.
B	<p>Loads prone to shifting (E.g., pipe, timber, poles, metal rods, or other similar material.) Marshalling restrictions apply when lading is both:</p> <p>a) in an open:</p> <ul style="list-style-type: none"> - top car, - trailer moving in piggyback service, or - container in the end position on the car; and <p>b) not protected by end bulkheads extending to top of lading.</p> <p>Note: These loads are not prone to shifting:</p> <ul style="list-style-type: none"> • flat cars loaded with steel plates or machinery; • bulkhead flats loaded with banded or packaged lumber that does not extend above the bulkhead by more than 50 percent. 	<p>On trains operating without a manned caboose, marshal loads prone to shifting not more than:</p> <ul style="list-style-type: none"> • 3000 feet from leading locomotive (EXPRESSWAY), or • 2000 feet from the leading locomotive (all other trains). <p>Separate loads prone to shifting from occupied:</p> <ul style="list-style-type: none"> • cabooses, • service equipment cars, and • passenger cars, <p>by at least two cars of any type, or by one:</p> <ul style="list-style-type: none"> • full sized steel box car, • car loaded with one or more containers, or • bulkhead type car the ends of which extend above the load being protected against. <p>Separate loads prone to shifting from:</p> <ul style="list-style-type: none"> • a locomotive, • a car containing livestock, • an SBU (Sense and Braking Unit) <p>by at least one car of any type.</p>
C	Special loads requiring observation	<p>Marshal as close as possible to leading locomotive, and not exceeding 2000 feet from the leading locomotive.</p> <p>Notification that a special load is in the train is given by:</p> <ul style="list-style-type: none"> • train consist or protection notice (as per GOI Section 10 Item 5.7), or • Service Area Manager – Field Operations.
D	Transformers, or Circuit breakers	Marshal at head-end of the train, no more than 15 car lengths (approximately 600 feet) from the locomotive, when practicable.
E	Traction motors, or Locomotive wheelsets	Marshal at head-end of the train to facilitate switching to shops, when practicable. (Do not delay trains to accommodate this instruction.)

SPECIFIC EQUIPMENT AND LOAD INSTRUCTIONS

Refer also to operating bulletins and subdivision footnotes under the heading "EQUIPMENT RESTRICTIONS."

The loads and equipment in this section have detailed instructions for their switching, marshalling and handling. When switching, see item 15.1, Coupling Cars Safely.

17.0 Scale Test Cars

17.1 Speed Restrictions

Use the following table to identify speed restrictions for scale test cars.

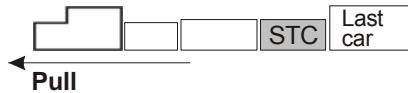
Scale Test Car Speed Restrictions			
Car Type	Car Numbers	When authorized freight train speed is:	Maximum speed with scale test cars is:
Two-axle	420926, 420928, 420932, 420939, 420941 CN 52104, CN 52108, CN 52109, CN 52257, CN 52258, CN 52274, CN 52277, GTW 52264, GTW 52265, MNWX 444, MNWX 555	30 MPH or over	30 MPH
		25 MPH or less	Authorized freight train speed
Short, four-axle	420927, 420930, 420934, 420935, 420936, 420938, CN 52280, CN 52281, CN 52284, CN 52285	50 MPH or over	50 MPH
		45 MPH or less	Authorized freight train speed
Unrestricted	420937, 420942, 420940 CN 52259, CN 52279 CANX 61300, CANX 61301, MNWX 333	Any speed	Authorized freight train speed

17.2 Permission for Movement

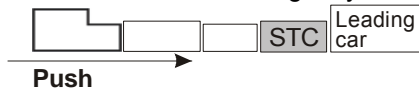
Before placing a scale test car in a train, the responsible NMC Manager (Operations Manager Calgary / Asst. Manager RTC Montreal) must give permission.

17.3 Switching Two-axle Scale Test Cars (STC)

- Do not hump.
- Adjacent car(s) must **not** be longer than 55 feet outside length.
- When pulling, marshal two-axle scale test car immediately in front of the last car in the direction of travel, unless handling only scale test car(s). Last car must not exceed 40 tons gross weight.



- When pushing, marshal two-axle scale test car immediately behind the leading car in the direction of travel, unless handling only scale test car(s). Leading car must not exceed 40 tons gross weight.



17.4 Marshalling Two-axle Scale Test Cars

- Marshal immediately ahead of:
 - the operating caboose (where provided), or
 - the rear car. (Maximum rear car weight is 40 gross tons.)
- Adjacent car(s) must have:
 - an outside length of 55 feet or less, and
 - operative brakes.
- Only one two-axle test car may be handled per train.

Note: When a two-axle scale test car listed in item 17.1 is marshalled incorrectly, Part 3 of the Train Area Marshalling Messages on the train consist displays:

"XX nnnnnn SCALE TEST CAR MARSHALLED INCORRECTLY."

17.5 Marshalling Short Four-axle Scale Test Cars

Maximum length of adjacent car(s) is 80 feet (outside length).

Note: When a short four-axle scale test car listed in item 17.1 is marshalled incorrectly, Part 3 of the Train Area Marshalling Messages on the train consist displays:

"XX nnnnnn SCALE TEST CAR MARSHALLED INCORRECTLY."

18.0 Cranes, Combination Crane-Pile Drivers, and High-Rail Cranes**18.1 Speed Restrictions**

Use the following table to identify speed restrictions for cranes, combination crane-pile drivers, and hi-rail cranes.

Crane Speed Restrictions			
Tons Capacity	Series	When Authorized Freight Train Speed is:	Train must not exceed (unless otherwise specified in Time Table Footnotes)...
40	414233	40 MPH or over	35 MPH
		30 MPH to 35 MPH	25 MPH
		25 MPH or less	Authorized Freight Train Speed
40/50	414232	45 MPH or over	45 MPH
		40 MPH or less	Authorized Freight Train Speed
150	414400	30 MPH or over	25 MPH
		25 MPH or less	15 MPH
200	414479 and 414480	40 MPH or over	35 MPH
250	414502 and 414503	30 MPH to 35 MPH	25 MPH
250	414650	25 MPH or less	Authorized Freight Train Speed
150/250	CN 50416 and CN 50108	Boom trailing	
		40 MPH or over	35 MPH
		25 to 35 MPH	5 MPH less than Authorized Freight Train Speed
		20 MPH or less	Authorized Freight Train Speed
		Through all turnouts	5 MPH
		Boom NOT trailing	
		25 MPH or over	20 MPH
		20 MPH or less	Authorized Freight Train Speed
Through all turnouts	5 MPH		
Combination Crane-Pile Driver Speed Restrictions			
30	414212 to 414214, SOO 751209	30 MPH or over	25 MPH
		25 MPH or less	15 MPH
40/50	414216 to 414222 incl.	45 MPH or over 40 MPH or less	45 MPH Authorized Freight Train Speed
Self-Propelled Hi-Rail Crane Speed Restrictions			
		Forward Direction	Hi-Rail Crane must not exceed...
100	414030 and 414031	25 MPH or over	25 MPH
		20 MPH or less	Authorized Freight Train Speed
110	414032 and 414033	Through all turnouts	5 MPH
130	414041 to 404043 incl.	Reverse Direction	
		15 MPH or over	15 MPH
		10 MPH or less	Authorized Freight Train Speed
		Through all turnouts	5 MPH

18.2 Marshalling Restrictions

- a) **Trailing car tonnage:** Marshall cranes, combination crane-pile drives, or other similar equipment (except crane CP 414232, and combination crane-pile drivers CP 414216 to 414222 inclusive), such that:
- Trailing car tonnage behind this equipment does **not** exceed 3000 tons.
- Note:** Train Area Marshalling messages do **not** indicate when the maximum trailing car tonnage is exceeded.
- b) **Direction of Travel:** When marked by arrows to indicate the direction of travel, marshal the equipment to move in this direction. On wrecking cranes, where no direction of travel is indicated, boom may be trailing or facing the direction of travel.
- c) **Separation:**
- Except crane CP 414232, and combination crane-pile drivers CP 414216 to 414222 inclusive, separate from
 - the leading locomotive by at least one car, but not by more than 500 feet; or
 - an occupied operating caboose by only one car.
 - Cranes up to 150 tons capacity, and Combination Crane-Pile Drivers:
 - Also separate by at least two cars from car(s) heavier than 220,000 pounds gross weight (or lesser weight where restricted by subdivision footnote).
 - Cars used for separation must have an outside length of at least 44 feet.
 - Cranes of 200 to 250 tons capacity:
 - Also separate by at least one car from cars heavier than 142,000 pounds (or lesser weight where restricted by subdivision footnote) shall be marshalled closer than the second car from each piece of this equipment.
 - Cars used for separation must have an outside length of at least 44 feet.

- d) **Marshalling Exceptions:** When Mechanical Services personnel supervise and accompany the movement, the equipment may be marshalled:
- anywhere in the train, provided it is separated from occupied equipment by at least one car.
 - opposite the direction of travel indicated by an arrow.

18.3 Permission and Protection Notice

- a) Before placing a crane, combination crane-pile driver, or high-rail crane in a train, get permission from the responsible NMC Manager (Operations Manager Calgary / Asst. Manager RTC Montreal). The Responsible NMC Manager then ensures:
- connecting service areas, conductors, locomotive engineers and all concerned with a movement are given complete instructions regulating the movement.
 - combination crane-pile driver CP 414219 and cranes CN 50108 and CN 50416 are accompanied by a protection notice when moved. (These are dimensional shipments.)
- b) Before handling foreign cranes (except self-propelled hi-rail cranes), get permission from the Railway Line Clearance Bureau. (The movement may require a protection notice.)
- In an emergency, the Director Operations - NMC in consultation with Mechanical Services may authorize movement in a regular train consist.
- c) Restrictions for the movement of cranes, combination crane-pile drivers, and high-rail cranes are described in time table subdivision footnotes.

19.0 Service Equipment Cars – Person in Charge Responsibilities

19.1 Service Equipment Safety

The person in charge of service equipment cars must ensure:

- a) Each occupied service equipment car is equipped with:
 - a means of voice communication with the train crew, or
 - an emergency brake valve.
- b) Propane cylinders installed for use in service equipment cars are equipped with;
 - an automatic shut off valve for the supply of fuel from each propane cylinder; and
 - a pilot flame monitoring device to automatically shut off the supply of fuel in the event of pilot flame failure.

Note: Spare propane cylinders must not be carried in occupied service equipment cars.

19.2 Before Moving

Before allowing the movement of service equipment cars, the person in charge of these cars must ensure:

- a) **occupied** service equipment has:
 - all heavy furniture, appliances, and other heavy objects securely fastened to the structure of the car; and
 - all tools and equipment secured in a place isolated from living quarters.
- b) **unoccupied** propane equipped service equipment cars have:
 - all flame extinguished and main propane valves closed;
 - water systems fully drained during freezing weather.

19.3 Notification

- a) The person in charge of service equipment cars who arranges for their movement, must inform the Operations Manager - NMC:
 - whether any of the cars will be “occupied” or “not occupied”;
 - if not occupied whether they contain stoves, propane ranges, tables, etc.;
 - of any subsequent change in this status.
- b) **The RTC or person in charge of the cars must give this information to the conductor.**

19.4 Protection in Sidings, Back Tracks, or Other Tracks

- a) The person in charge of occupied service equipment cars placed in sidings, back tracks, or other tracks must protect these cars against other train movements by:
 - Requesting a GBO or DOB that states:

“Occupied service equipment cars placed in (track) at (location)”;

Note: GBO not required when occupied service equipment cars are placed in yard.
 - spiking the switches of back tracks and other tracks, or locking them with special locks;
 - where practicable, spiking the switches of sidings, or locking them with special locks;
 - not coupling to or moving, unless authorized by the foreman in charge.
- b) In addition, when occupied service equipment cars are placed in a track adjacent to a main track and within 30 feet, track centre to track centre:
 - the person in charge must request GBO or DOB speed restriction that states:

“Do not exceed 30 MPH while passing occupied service equipment cars in (track) at (location).”

Note: Track speed may be reduced based on site conditions such as curvature, elevation differences, proximity of switch and/or crossing locations. This will be determined based on assessment of each location in consultation between the person in charge, Field Operations and the Manager Operations NMC.

When the distance separating such adjacent track and a main track exceeds 30 feet between track centres, a speed restriction is **not** required.

20.0 Service Equipment Cars – Train Crew Responsibilities

20.1 Definition

Service Equipment:

- Cars used to house employees at work sites;
- Material cars used to:
 - transport maintenance-of-way equipment, or
 - for other railway purposes (except revenue service);
- Auxiliaries.

20.2 Speed Restrictions

A train handling occupied service equipment must not exceed 35 MPH, except as specified in item 20.4 below.

20.3 Switching Restrictions

The following instructions apply when switching occupied service equipment cars, or unoccupied service equipment cars equipped with stoves, propane ranges, or tables.

- a) Do **not** couple to or move occupied service equipment cars, unless authorized by the person in charge.
- b) Do **not** cut off in motion.
- c) Do **not** cut off other cars in motion towards these cars.
- d) Before coupling to or moving occupied service equipment:
 1. Stop between 12 and 6 feet from the cars to be coupled or moved.
(**CAUTION:** If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely.)
 2. Notify persons in or about the cars.
 3. Check cars to ensure all cables, hoses, temporary ladders etc., have been removed.
 4. After receiving the proper signal, couple carefully to avoid shock.

Note: The conductor will be informed when these restrictions apply to unoccupied service equipment.

20.4 Marshalling Restrictions

a) Location:

- Freight train: marshall at the rear of a freight train immediately ahead of operating caboose, where provided.
- Mixed freight and passenger train: marshall immediately ahead of any passenger cars.
- Where track configurations require extreme care in set-off movements, may be marshalled:
 - directly behind the lead locomotive consist;
 - at **speed not exceeding 20 MPH**;
 - for distance not exceeding 20 miles.

Note: These location restrictions do not apply to flangers, snow plows, spreaders and test cars are exempted from this item.

b) Maximum number of cars - A train handling:

- 30 OR LESS occupied service equipment cars, is restricted to 60 cars in total.
- MORE THAN 30 occupied service equipment cars is restricted to:
 - 80 cars total, and
 - service equipment cars only.
- Unoccupied service equipment cars containing stoves, propane ranges, or tables is restricted to 80 cars in total.

c) Unoccupied service equipment: The conductor will be notified when these restrictions apply to unoccupied service equipment

21.0 Business Cars

21.1 List of Business Cars and Car Numbers (##)

Name	Car #	Car Type	Air Brake	Max Speed MPH
Banffshire	85	Business	2 pipe	50
Craigellachie	84	Business	2 pipe	50
Killarney	71	Business	2 pipe	50
Mount Stephen	74	Business	2 pipe	50
NR Crump	79	Business	2 pipe	50
Royal Wentworth	78	Business	2 pipe	50
Strathcona	82	Business	2 pipe	50
Van Horne	77	Business	2 pipe	50
Assiniboine	70	Business	1 pipe	50
Lacombe	83	Business	1 pipe	50
Mount Royal	73	Business	1 pipe	50
Dominion	101	Coach	1 pipe	60*
HD Bowen	110	Sleeper	1 pipe	60*
Smokey Smith	102	Coach	1 pipe	60*
CP	105	Coach	1 pipe	60*
CP	106	Coach	1 pipe	60*
APU	95	Power	1 pipe	50
APU	96	Power	1 pipe	60*
CP	29114	Tool Car	1 pipe	60*
CP	99	Display	1 pipe	60*
CP	401750	Stage Car	1 pipe	60*
CP	401753	Stage Car	1 pipe	60*
CP	100	Baggage	1 pipe	60*

***Note:** If the cars indicated are operated in passenger or excursion train service, then passenger speed is permitted on CP track only, not exceeding maximum authorized speed as indicated.

Note: These cars normally operate in "Business Car Trains." They may also be handled in freight trains (see item 21.2).

21.2 Marshalling Business Cars in Freight Trains (Occupied or Unoccupied)

Business Cars handled on Freight Trains, must be marshalled as follows:

- A**
- On trains equipped with a Tail End Remote (TER), Business cars are to be marshalled immediately behind the TER. **Note:** cars equipped with a 2 pipe air brake system must have the brake pipe and main reservoir pipes properly coupled.
 - On Conventional trains, Business cars may be handled on the head end provided the total weight of the train, including the business cars, does not exceed 3500 tons.
 - On Conventional trains where the train weight will exceed 3500 tons, business cars that:
 - do **not** have a 2 pipe air brake system must be marshalled at the extreme rear of a freight train, or immediately ahead of operating caboose(s) (where provided).
 - have a 2 pipe air brake system must be marshalled at the rear of the train to comply with Section 13 items 16.0 through 16.6 (movement of cars with inoperative brakes). (That is, there must be at least 3 cars with operative brakes at the rear, and no more than 2 cars with inoperative brakes can be coupled together). The brakes on these cars are considered inoperative when handled on a freight train with only the brake pipe coupled.

B APU cars 95 & 96 may be marshalled within a train provided trailing tonnage does not exceed 3500 tons.

C Business cars must not be coupled to cars equipped with shelf couplers.

D See item 13.0, Speed Restrictions and Item 21.1, Maximum Authorized Speed.

Note: Single pipe brake system Business cars as indicated in item 21.1, may be equipped with a secondary bypass line to allow for use with a 2 pipe air brake system if necessary.

22.0 Business Car Trains

22.1 Speed Restrictions

On ALL tracks (including CN) do not operate a Business Car Train or any train handling cars listed in item 21.1 at a speed greater than time table freight train speed not exceeding 50 MPH.

Note: these speed restrictions only apply to CP business cars listed and do not apply to foreign business cars unless otherwise directed.

22.2 Protection

When an occupied Business Car Train (e.g., RCP Train) is placed in sidings, back tracks or other tracks, the person in charge (conductor or company officer) must arrange the following:

- a) GBO or DOB protection against other train movements reading as follows:
 - “Occupied passenger equipment placed in (track) at (location) must not be coupled to or moved, unless authorized by (employee in charge - name and telephone number).
 - Do not exceed 30 MPH while passing occupied service equipment cars.
- b) Lock the switches of the occupied track(s) (e.g. sidings, back tracks or other track) with special locks.

22.3 Locomotive Brakes

- a) A-unit 1401 and B-unit 1900 are normally assigned to business car trains. These Locomotives are **not** equipped with **dynamic brakes**.
- b) Use light **independent brake** in conjunction with the automatic brake when:
 - necessary depending on the number of cars/locomotives in the train,
 - descending heavy or mountain grades. (Note: Using only train air brakes may cause premature wheel wear, or brake shoe wear.)

22.4 Air Brakes

- a) To ensure brakes apply throughout the train, make an initial air brake application of at least 10 psi. (**Note:** Business car brake cylinder pressure was substantially reduced to prevent wheel slides caused by the new high friction composition brake shoes.)
- b) When conditioning brake shoes in the winter, also keep this reduced brake cylinder pressure in mind.
- c) Standard Brake Pipe Pressure is 90 psi. Brake Cylinder Pressures are as follows:

Reduction	BC pressure
10 psi	12 psi
Full Service	32 psi
Emergency	38 psi

- d) **CAUTION:** Business car air brakes are set for direct release, **not** graduated release. Do **not** attempt a graduated release, because some business cars are still equipped with freight train brakes.

22.5 Train Air Brake Test

- a) Before performing a train air brake test:
 - Supply main reservoir pressure to all cars in the train.
 - Verify there is sufficient main reservoir pipe on the rear car.
 - i) At a **safety inspection locations** verify with car department personnel that a permanent or portable gauge on rear car indicates main reservoir pressure is at least 105 psi, **OR**
 - ii) At **other locations**, where a gauge is not available, verify by completing the following steps:
 1. Firmly grasp the main reservoir hose on the rear car.
 2. CAREFULLY crack open the trailing main reservoir valve.
 3. Listen for the sound of pressurized air.
 4. Close the valve.
- b) Complete the brake test as per Section 13, items 5.2 and 5.3.
- c) At crew change points, the outgoing crew may confirm the integrity of the main reservoir air with the incoming crew.

22.6 Uncoupling/Coupling

- a) Before uncoupling from cars with a 2 pipe air brake system, close the main reservoir pipe valves on the locomotive and car.
 - Do not part the main reservoir hoses by hand.
 - In regard to brake pipe angle cocks, comply with Section 14, item 2.0 (Uncoupling and Leaving a Portion of a Train Standing with Emergency Air Brakes Applied).
- b) When coupling or uncoupling one business car from another, handle main reservoir pipe and brake pipe as per items 22.6 a) and 22.5, above.
 - If there are electric cables, communication cables, or other compressed air connections between the cars, be governed by instructions from the person in charge (e.g., train manager, road manager, or Mechanical Services employee).

23.0 Track Evaluation Cars (TEC) - 63, 64, 65, 68, 424993 & 424994**23.1 TEC Train Sets**

The TECs operate with locomotives 8217 and 8218 in two dedicated train sets. The train sets can be marshalled into any combination, but usually as follows:

Train Set 1	
8217	Dedicated locomotive GP-9 DRS-17 type;
68	Accommodation Car;
424993	Generator/Gauge Restraint Measurement System (GRMS) car;
63	Track Evaluation Car (TEC).
Train Set 2	
8218	Dedicated locomotive GP-9 DRS-17 type;
424994	Generator car;
65	Accommodation car;
64	Track Evaluation Car (TEC).

23.2 Equipment Description**Air Brakes and Hand Brakes**

- a) Hand brakes are located on the vestibule ends of cars 63, 64, and 65.
- b) Hand brakes on cars 68, 424993 and 424994 are located on the "B" end of the cars.
 - Car 68 does **not** have a vestibule.
- c) The instrumented truck of car 64 has a valve that applies brakes during an emergency application, but not during a service application. This is considered operative brakes in the application of air brake rules.
 - Car 64 can be marshalled at rear of train.

Additional Information

- a) TV/Video cameras are mounted on the forward end of the dedicated locomotive to allow the TEC operators to see up-coming track appliances.
- b) An intercom system located in the cab of the dedicated locomotive connects the Locomotive Engineer with the TEC staff when testing.
- c) Cars 63 and 64 have a protective skirt installed over the gauge measuring beam, which extends to the top of the rail. This approved installation creates no risk to the movement of these cars, or to the public.
- d) 424993 is equipped with a Gauge Restraint Measurement System (GRMS). This assembly applies the test loads of the measurement system to the track during a "gauge stress measurement test." TEC staff retract the assembly when not required.

23.3 Speed Restrictions

- a) When used as the lead locomotive, the ditch lights and pilots at the rear end of locomotives 8217 and 8218 allow for reverse operation at track speed.
- b) Unless otherwise restricted by TEC staff, when testing or deadheading, it is permissible to operate at time table speed for the fastest freight train, but not exceeding **60 MPH**.
- c) On CNR Yale and Ashcroft Subs, the TEC train is permitted to operate at Express Speed when testing or when running light.

- d) Fuel conservation speed restrictions do not apply to the TEC train when TESTING or when RUNNING LIGHT. The restrictions do apply when the TEC train is DEADHEADING.

TEC staff will advise train crew when the following restrictions apply:

- e) When car 63 or 64 is testing in reverse direction with locomotive pushing, speed must not exceed **25 MPH**. With locomotive leading, test speed will be track speed.
- f) During a “gauge stress measurement test” (GRMS), speed must not exceed **35 MPH**.

23.4 Switching TEC Cars

- a) Handle with extreme care to avoid damage.
- b) Do not pass over tracks with a hump or inert retarders.
- c) Do not uncouple TEC cars and TEC locomotives without permission from TEC staff.

23.5 Handling TECs

- a) Handle with extreme care to avoid damage. (Cars 63 and 64 are equipped with shock sensors.)
- b) Do not uncouple TEC cars and TEC locomotives without permission from TEC staff.
- c) Handle as “occupied passenger equipment” (Section 9, item 7.0), unless otherwise indicated. (This includes switching and train handling, when running light or deadheading, with or without the TEC staff aboard).
- d) When testing, cars 63 and 64 should have the “A” end (with viewing window) trailing, unless authorized by the TEC staff to facilitate handling.

23.6 RTC Responsibility During Testing

- a) Ensure the TEC train holds the main track during meets with other trains, unless the siding involved has been designated for testing.
- b) When not practicable to hold the main track, contact staff on the TEC **before** the TEC train enters the siding, to prevent loss of data.

23.7 Marshalling TEC Equipment on Freight Trains

Do **not** handle on freight trains, except under special circumstances when authorized by the TEC staff.

- a) When deadheading, marshall directly behind the trailing locomotive.
- b) When testing, marshall all cars in the set at the rear of the train.
 - If the dedicated locomotive accompanies the TEC cars, marshall the locomotive at head end of the train.

24.0 Brake Pipe Run-around Hose

24.1 Mechanical Services Responsibility

- a) When a brake pipe run-around hose is applied to a car, the Mechanical Services employee in charge must:

Arrange to have an appropriate message generated on the train consist advising train crews that a brake pipe run-around hose is applied to that car.

For example, the message would say:

```
*****
CAUTION-TEMP BRAKE PIPE
RUN-AROUND HOSE
*****
```

- b) When a brake pipe run-around hose is applied that protects more than one car, the Mechanical Services employee in charge must:
 - Secure the uncoupling levers between the protected cars and render them in-operative.
 - Arrange to have an appropriate message generated on the train consist advising train crews that the applicable car(s) cannot be uncoupled from adjacent car(s) account run-around hose applied.

For example, the message would say:

```
*****
CAUTION-TEMP BRAKE PIPE
RUN-AROUND HOSE
MARRIED TO CP123456
*****
```



24.2 Conductor Record Keeping

The conductor must record this information on the Crew to Crew Form for the outbound train crew and at the car's or cars destination, advise the Supervisor responsible.

24.3 Handling Restrictions

- a) Non-sensitive traffic: Set off the car for repair at the next repair point reached en route to destination.
- b) Car(s) with brake pipe run-around hose:
 - are captive to CP and must not interchange with another railway;
 - must not leave Canada.

24.4 Destination or Repair Point - Car Setoff

1. Before uncoupling brake pipe run-around hose gladhands, ensure the brake pipe pressure is 0 psi.
 - Trains equipped with an SBU - The locomotive engineer must activate the TIBS emergency feature as per Section 14 item 2.0 a).
 - Trains **not** equipped with an SBU - The locomotive engineer must make an emergency brake application using the automatic brake valve.
2. Part brake pipe glad hands by hand. It is prohibited to "pull the pin" and allow the hoses to part by car/locomotive movement.
3. After hoses are parted, attach any excess length of run-around hose securely to the car body.
4. Advise the responsible supervisor that the brake pipe run-around hose is no longer in use.

25.0 Container Traffic - Electric Power Cable Strung Between Cars

25.1 Consist Warning Message – Bad Order Setoff

The train consist displays warning advising train crews that the applicable cars cannot be uncoupled from each other account electric supply cable connecting car to car.

For example, if there were 3 cars involved (e.g. DTTX 1, DTTX 2, DTTX 3) the warning would list each car. For example:

```

*****
WARNING DO NOT UNCOUPLE FROM CAR
DTTX 1, DTTX 2, DTTX 3
ACCOUNT ELECTRIC CABLE CONNECTIONS
*****
    
```

To set off a bad order en route, set off the bad order plus all cars connected to it with electric power cables. It is not possible to set off one of these cars from the set. Ensure the RTC is advised as per Section 5, item 16.0.

25.2 Appearance of Cables and Affixed Warning Signs

To alert all employees that electrical cables are connected and that cars should not be uncoupled until cables are removed, warning tags will be applied to the electrical cable(s) between the cars.



Electrical Cable Strung between Cars with affixed warning signs:



26.0 Handling Continuous Welded Rail (CWR) or Strings of Bolted Rail

26.1 Speed Restrictions – Strings Longer than 150 Feet

- a) **Less than 16 strings** - Cars containing fewer than 16 strings of CWR or bolted rail may be moved in regular trains, or special trains, without speed restrictions providing:
- CWR equipment is used;
 - the train consist includes a buffer car at each end of the rail; and
 - each string is secured.
- b) **16 Strings or more** - The following speed restrictions apply:

	16 – 25 Strings	More than 25 Stings
Maximum authorized speed	45 MPH	30 MPH
Through turnouts	15 MPH	10 MPH
Through curves 8 degrees or over*	20 MPH	15 MPH

*Curves 8 degrees or over are located between the following locations.

Alberta Service Area
Brecht Sub
Mile 0.0 and Mile 1.0
Cardston Spur
Mile 0.0 and Mile 0.1
Crowsnest Sub
Mile 97.6 and Mile 101.1
Laggan Sub
Mile 122.7 and Mile 136.5
Mile 122.6 and Mile 123.2 South Track
Pecten Sub
Mile 25.8 and Mile 26.4
Shantz Sub
Mile 0.0 and Mile 0.1
Stirling Spur
Mile 84.1 and Mile 84.3

BC Interior Service Area
Boundary Sub
Mile 1.0 and Mile 1.4
Mile 8.2 and Mile 11.0
Mile 20.9 and Mile 25.4
Cranbrook Sub
Mile 2.9 and Mile 9.7
Mile 36.6 and Mile 37.7
Mile 53.6 and Mile 53.9
Mile 67.8 and Mile 68.1
Mile 70.1 and Mile 70.5
Mile 95.5 and Mile 95.8
Fording River Sub
Mile 0.5 and Mile 0.7
Mile 33.5 and Mile 33.7
Mountain Sub
Mile 1.5 and Mile 7.23
Mile 11.3 and Mile 11.5
Mile 13.0 and Mile 13.2
Mile 15.1 and Mile 15.4
Mile 20.0 and Mile 21.0
Mile 22.6 and Mile 33.8
Mile 53.4 and Mile 54.1
Mile 66.1 and Mile 66.3 Both Tracks
Mile 69.8 and Mile 72.1 Connaught Track
Mile 75.4 and Mile 76.4 Connaught Track
Mile 92.1 and Mile 92.9
Mile 94.5 and Mile 99.4
Mile 123.6 and Mile 124.7
Moyie Sub
Mile 0.0 and Mile 0.7
Mile 14.3 and Mile 19.6
Mile 26.0 and Mile 30.7
Mile 36.2 and Mile 36.4
Mile 42.6 and Mile 43.4
Nelson Sub
Mile 42.7 and Mile 43.2
Mile 46.6 and Mile 51.9
Mile 54.2 and Mile 66.0
Mile 69.8 and Mile 117.1
Mile 120.9 and Mile 137.3
Rosland Sub
Mile 1.0 and Mile 2.5
Mile 8.2 and Mile 17.4
Shuswap Sub
Mile 4.2 and Mile 4.5 North Track
Mile 16.6 and Mile 16.8
Mile 28.3 and Mile 28.4
Mile 36.4 and Mile 36.5

Mile 46.0 and Mile 53.5
Mile 59.2 and Mile 60.6
Mile 68.6 and Mile 68.7
Mile 73.5 and Mile 73.7
South Track
Mile 75.3 and Mile 75.5
South Track
Mile 82.1 and Mile 89.7
Mile 92.2 and Mile 92.4
Mile 99.8 and Mile 100.1
Windermere Sub
Mile 14.6 and Mile 14.9
Mile 48.9 and Mile 50.9
Mile 63.4 and Mile 64.0
Mile 66.5 and Mile 66.7
Mile 67.8 and Mile 68.0
Mile 75.4 and Mile 75.6
Mile 76.8 and Mile 77.1
Mile 83.4 and Mile 84.4
Mile 91.0 and Mile 91.4
Mile 112.6 and Mile 112.9

Montreal Service Area
Farnham Connection Sub
Mile 1.1 and Mile 1.4

Northern Ontario Service Area
Heron Bay Sub
Mile 72.4 and Mile 74.1
Mile 81.5 and Mile 81.6
Mile 101.4 and Mile 101.8
Nemegos Sub
Mile 13.5 and Mile 13.7
Nipigon Sub
Mile 4.5 and Mile 4.7
Mile 27.6 and Mile 27.8

Vancouver Service Area
Cascade Sub
Mile 4.3 and Mile 4.7
Mile 7.0 and Mile 11.6
Mile 13.0 and Mile 14.5
Mile 16.9 and Mile 17.3
Mile 20.8 and Mile 21.6
Mile 22.9 and Mile 25.8
Mile 37.5 and Mile 37.8
Thompson Sub
Mile 8.8 and Mile 15.6
Mile 21.7 and Mile 22.0
Mile 26.6 and Mile 29.7
Mile 36.3 and Mile 36.6
Mile 50.2 and Mile 50.7

Mile 56.7 and Mile 57.2
Mile 66.6 and Mile 66.7
Mile 73.0 and Mile 76.3
Mile 79.9 and Mile 80.2
Mile 83.5 and Mile 83.7
Mile 86.7 and Mile 88.3
Mile 90.2 and Mile 92.0
Mile 100.0 and Mile 103.1
Mile 108.4 and Mile 110.8
Mile 112.6 and Mile 114.4
Mile 117.2 and Mile 118.9

26.2 Speed Restrictions - CP CWR trains on CN Track

The following speed restrictions apply to CP CWR trains operating on CN Track.

- a) When **loaded** (maximum 82 cars) with 1 or more rails, do not exceed:
 - 40 MPH on straight track
 - 30 MPH on curves
 - 10 MPH through turnouts

Note: Loaded CP CWR cars (maximum 40) may be moved in regular trains on CN Track, provided the cars (including buffers at each end), are marshalled on the Head End of the train.

- b) When **empty**, maximum authorized speed: 50 MPH.

26.3 Switching Restrictions

- a) Avoid sudden stops and rough coupling.
- b) Do not cut off in motion.
- c) Do not allow to be struck by a car moving under its own momentum.

26.4 Marshalling Restrictions

- a) When cars loaded with CWR or bolted rail:
 - have more than 15 strings, and
 - the strings are longer than 150 feet;
then MOVE THESE CARS IN SPECIAL TRAIN, and include a buffer car at each end of the rail.
- b) Two loaded rail trains (one of which has 15 strings or more of CWR or bolted rail) must not be coupled together.

26.5 RTC Instructions

When practicable, ensure the rail train holds the main track during meets with other trains.

26.6 Break-in-two - Cars Carrying Long Strings of Rail

- a) Notify RTC immediately. Give location and all pertinent information regarding break-in-two.
- b) If possible, clear the main track before attempting to re-couple. When attempting to re-couple, ensure all rails enter the proper compartment on the roller racks.
- c) If the train is on a grade, apply sufficient hand brakes to secure cars, until air pressure behind the break-in-two is restored. (This prevents movement if the air brakes leak off.) Where grades are involved, it is preferable to handle on descending grades to set off point.
- d) If the train is on level or nearly level grade, cars of rail may be safely pulled to the nearest set-off point providing:
 - The movement is made using extreme caution, and
 - Abrupt starts and stops are avoided.

- e) To restore air throughout the entire train and to tie cars together at the point of break-in-two, the following equipment is located in brackets on the side of the anchor car near the centre of the rail train.
 - Two 25-ft. and one 15-ft. air hoses with connections,
 - Two 25-ft. and one 15-ft. length of 1" cable with hooks.

26.7 Rail Shifting

If one or more strings of welded rail shifts:

- a) Notify the RTC immediately. Give location and all pertinent information.
- b) If possible, remove anchors and loosen tie-down bolts on displaced strings.
- c) To pull strings into place, use:
 - safety pull hoists (located in the side of the roller rack on the first car behind the tie-down car), or
 - winch on "threader car" (if available).
- d) After readjusting strings and recoupling cars, re-tighten all hold-down bolts and reapply anchors.

APPENDIX 1: Train Area Marshalling Messages

Note: Locomotive consists on a Distr Pwr train may be identified as follows in these messages:

- L - Lead locomotive consist
- R1 - First remote locomotive consist
- R2 - Second remote locomotive consist
- R3 - Third remote locomotive consist

**** TRAIN AREA MARSHALLING MESSAGES ****
LOG KEY nnnnnnnnnnnnnnn

- When shown, this line provides information to computer personnel about the train consist, but does not form part of the Train Area Marshalling Messages.

PART 1 - TRAIN INFORMATION

TRAIN TYPE - XXXXXXXXXXXXXXXXXXXX

- This line indicates the train type. (See definitions, item 2.3.)

WEIGHT PER OPERATIVE BRAKE nnn TONS

- Shows total train weight, including locomotives, divided by the total number of operative control valves. Used in the application of item 13.0 (G) and Section 16 - Appendix 1, Descending Heavy Grade Job Aid and in time tables under General Footnotes.

DYNAMIC BRAKE - APPLY GOI INSTRUCTIONS FOR A CONVENTIONAL TRAIN

- This line will appear for each conventional train. Apply GOI Section 16 Item 7.1 to limit total dynamic brake if required.

DYNAMIC BRAKE NOT RESTRICTED

- This line will appear for a Distributed Power train for which full available Dynamic Brake may be utilized.

CARS OR PLATFORMS: ON TRAIN nnn

- On a conventional train, lists the total count, cars or platforms.

LENGTH DISTRIBUTION (FEET) - L nnnnn R1 nnnnn R2 nnnnn R3 nnnnn

- This line will appear for a Distributed Power train, and indicates the train length in each segment of the train.

WEIGHT DISTRIBUTION (TONS) - L nnnnn R1 nnnnn R2 nnnnn R3 nnnnn

- This line will appear for a Distributed Power train, and indicates the train weight in each segment of the train.

PERCENTAGE OF TRAIN WEIGHT BEHIND LAST REMOTE LOCOMOTIVE nn %

- Indicates the percentage of total train weight behind the last remote locomotive. This information may be required when the train is handling over 40 cars with cushioned drawbars.

CARS ON TRAIN WITH CUSHIONED DRAWBARS nnn

- Indicates the total number of cushioned drawbar cars on the train. (See item 5.0.)

CD OVER: vvv REAR 25%: www WGT: xx% NO: yy% MAX BLOCK: zzzzz TONS

This line will only appear if Cushioned Drawbar Rule 2 or Rule 3 can apply to the train. It provides information to those responsible for making up trains in yards and terminals on how train should be marshalled to avoid having Rule 2 or Rule 3 apply to the train. It does not provide information required for train crews.

PART 2 - CAUTION MESSAGES

Some messages in Part 2 give an instruction to the train crew. For example:

DYNAMIC BRAKE RESTRICTED - DO NOT EXCEED nnn KLBS RETARDING FORCE

- This line will appear for a Distributed Power train for which use of DP is restricted to avoid excessive in-train forces. It may be possible to reduce or eliminate this restriction by placing remote locomotive(s) in a different position in the train.

CD RULE 2 - CUSHIONED DRAWBAR SPEED RESTRICTIONS APPLY

- See item 5.2.

DRAFT FORCES EXCEED 24 AXLES LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when the draft forces in a Heavy Bulk Distributed Power train exceed the maximum permitted for 24 axle territory (but do not exceed the equivalent of 30 driving axles), and indicates behind which locomotive(s) draft forces are exceeded. Unless operating only in 30 axle territory, train must be remarshalled. See GOI Section 15, Item 4.3.

The following messages are for information only and do not require crew action.

WAYBILL INFORMATION MISSING - PROCESSED AS EMPTIES nnn CARS

PLATFORM LOADING PATTERN UNKNOWN FOR nnn CARS

- Cars received at interchange may be missing loading pattern information; therefore the computer system assumes the most restrictive loading pattern.

MORE THAN 24 CARS MEET THIS CONDITION - INDIVIDUAL CARS NOT SHOWN

- Whenever "nnn CARS" or "nn CARS" is shown at the end of a message, the individual car numbers that meet that condition are listed, up to 24 cars, in the lines immediately following. If there are more than 24 cars that meet the condition, then this message is displayed. This message is also displayed, when appropriate, in Part 3.

VALID MASTER/REMOTE NOT DETECTED LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This means that the computer did not detect a valid master/remote locomotive in one or more positions on a Distributed Power train. Only those positions in which a valid master/remote was not detected will be shown. This may be a foreign locomotive that is not in our system. Note that TrAM processing will still be done when this message appears.

CAR(S) AHEAD OF LEAD LOCOMOTIVE - TRAM PROCESSING NOT COMPLETED

- When a train is submitted to TrAM computer processing, and there is not a locomotive in the lead position (such as a snowplow train), this message will appear. In such case no other Caution message, or Part 1 or Part 3 of the Train Area Marshalling Messages, will appear on the train consist.

MORE THAN 3 REMOTE LOCOS DETECTED - TRAM PROCESSING NOT COMPLETED

- When a train is submitted to TrAM computer processing, and the system detects that there are 4 or more remote locomotive consists, this message will appear. In such case no other Caution message, or Part 1 or Part 3 of the Train Area Marshalling Messages, will appear on the train consist.

NO CAUTION MESSAGES

PART 3 - MARSHALLING VIOLATIONS

- This part is divided into messages that apply to **all** TrAM areas ("ALL AREAS"), and messages that are **specific** for each TrAM area (e.g., "***** AREA 1 *****").

******* ALL AREAS *******

CP 654321 LESS THAN 32 FEET COUPLED TO CAR GREATER THAN 65 FEET

- See item 6.2.

CP 123456 LESS THAN 41 FEET COUPLED TO CAR GREATER THAN 80 FEET

- See item 6.2.

CP 456789 SCALE TEST CAR INCORRECTLY MARSHALLED

- See items 17.4 and 17.5.

BUFF FORCES EXCEED MAXIMUM REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when the buff forces in a Distributed Power train exceed the maximum permitted, and indicates ahead of which remote locomotives buff forces are exceeded. Train must be remarshalled.

DRAFT FORCES EXCEED MAXIMUM LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when the draft forces in the train exceed the maximum permitted for that type of train, and indicates behind which locomotives draft forces are exceeded. Train must be remarshalled.

LOCO CAPACITY EXCEEDS MAXIMUM LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when there is more than maximum permitted equivalent locomotive capacity at any position in a Distributed Power train (see item 7.1), and indicates the position(s) in which locomotive capacity is exceeded. This may be corrected by removing or isolating locomotives, but another TrAM check is required after doing so.

MAXIMUM LENGTH xxxxx FT LEAD TO LAST REMOTE - EXCEEDED BY nnnnn FT

- See item 7.3.

FAILED REMOTE ZONE x MARSHALLING nn CARS

- See item 7.5. Applies to Mixed trains only. Message indicates ahead of which remote locomotive position remote zone fails. Message will be repeated if more than one remote zone fails remote zone marshalling.

REMOTE ZONE RULE DOES NOT APPLY

- Applies to certain Mixed trains only. See item 7.5.

REMOTE ZONE PROCESSING NOT DONE - PROHIBITED LOCO COMBINATION

- Displayed when there is a locomotive combination at any location in train which is prohibited. Locomotives must be remarshalled or set off and another TrAM check done.

PASSES REMOTE ZONE MARSHALLING

- Displayed when there are no Remote Zone marshalling violations. See item 7.5.

CD RULE 3 - CUSHIONED DRAWBAR CARS EXCEED MAXIMUM - REDUCE

- Displayed when there are over 120 cushioned drawbar cars on the train. See items 5.2 and 5.3.

CD RULE 3 - INSUFFICIENT CD CARS NEAR REAR OF TRAIN - REMARSHALL

- Displayed when train has a prohibited configuration of cushioned drawbar cars. See items 5.2 and 5.3.

CD RULE 3- REAR REMOTE LOCO INCORRECTLY PLACED FOR OVER 40 CD CARS

- Displayed when the rearmost remote locomotive consist is incorrectly placed for a train with over 40 cushioned drawbar cars. See item 5.2.

CD RULE 1 - NO CUSHIONED DRAWBAR RESTRICTIONS

- Displayed when there are no restrictions or violations related to cushioned drawbar cars. See item 5.2.

NO VIOLATIONS THAT APPLY TO ALL AREAS

- Displayed when there are no "all areas" violations.

***** AREA n *****

The following two messages can appear under Areas 1 to 6.

MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON nnn CARS

- Applies to mixed trains only. See item 6.3.

NO SPECIFIC VIOLATIONS FOR THIS AREA

- No violations for the area, but there may still be "all areas" violations, listed above.

The following three messages can appear under Areas 4 and 5:

INSUFFICIENT WEIGHT FOR AGWZ IF OVER 24 EQ DRIVING AXLES nn CARS

- Applies to certain Conventional trains in Ascending Grade Weight Zones (AGWZ) only. See item 8.0.

EXTREME HEAD END MEETS MINIMUM WEIGHT REQUIREMENTS FOR AGWZ

- Applies to certain Conventional trains in Ascending Grade Weight Zones (AGWZ) only. See item 8.0.

TRAIN WEIGHT LESS THAN THRESHOLD - AGWZ DOES NOT APPLY

- Applies to certain Conventional trains in Ascending Grade Weight Zones (AGWZ) only. See item 8.0.

***** END TRAIN AREA MARSHALLING MESSAGES *****

APPENDIX 2: Locomotive haulage ratings and equivalent axle counts

CP Unit Type and/or Model	Traction Motors	Haulage Rating	Equivalent Axles	CP Unit Type and/or Model	Traction Motors	Haulage Rating	Equivalent Axles			
DS-15 ¹ DS-17 ¹	All in	1000	4	DRF-43 (SD90MAC) SD70MAC SD70ACe	All In	2220	9			
	1 out	500	2		3 out	1100	4.5			
	More than 1 out	0	0		All in	2950 ²	12			
DRS-17	All in	1000	4		3 out	1500 ²	6			
	1 out	500	2		More than 3 out	0	0			
	More than 2 out in Mother	0	0	Other Foreign Road Models⁴						
DRS-20 (GP38) not PTC or QEG equipped	All in	1000	4	GP50	All in	1450	6			
	1 out	750	3		1 out	725	3			
	More than 1 out	0	0		More than 1 out	0	0			
DRS-20 (GP38) PTC or QEG equipped	All in	1200	5	SD50	All in	1800	7			
	1 out	900	3.5		2 out	1200	5			
	All in	1300 ²	5 ²		More than 2 out	0	0			
	1 out	975 ²	4.0 ²	SD70 SD70M	All in	2340	9.3			
	More than 1 out	0	0		2 out	1570	6.5			
DRS-30 (GP40)	All in	1000	4	SD80MAC	More than 2 out	0	0			
	1 out	750	3		All in	2460	10			
	More than 1 out	0	0		3 out	1700	7			
DRF-30 (SD40) not PTC or QEG equipped	All in	1500	6	B-30-7A B-36-7 B-32-8 B-40-8	More than 3 out	0	0			
	2 out	1000	4		All in	1200	5			
	More than 2 out	0	0		1 out	600	2.5			
DRF-30 (SD40) PTC or QEG equipped	All in	1710	7	C-30	More than 1 out	0	0			
	2 out	1140	4.5					All in	1500	6
	All in	1790 ³	7 ³					2 out	1000	4
	2 out	1190 ³	5 ³	More than 2 out	0	0				
	More than 2 out	0	0	C-32, C-36	All in	1800	7			
DRF-38 (SD60)	All In	2000	8		2 out	1200	5			
	2 out	1330	5.5		More than 2 out	0	0			
	More than 2 out	0	0	C-39	All in	2340	9.3			
DRF-44 (AC4400)	All in	2220	9		2 out	1570	6.5			
	1 out	1850 ⁵	8		More than 2 out	0	0			
	2 out	1450	6	D-8 D-9 D-9-40CW D-9-44CW	All in	2340	9.3			
	3 out	1100	4		1 out	1940	8			
	More than 3 out	0	0		2 out	1570	6.5			
	All In	2950 ²	12 ²		3 out	1170	4.5			
	1 out	2450 ^{2/5}	10 ^{2/5}		More than 3 out	0	0			
	2 out	1950 ²	8 ²	Notes: 1. Must not be used in multiple with any other class of locomotive. 2. Applies only if all locomotives in consist are QEG or PTC equipped, and/or if they are DRF-38, DRF-44, DRF-43 and DRF-60. 3. Applies only to Bulk or Uniform trains. 4. All models of locomotives not shown, including Passenger Locomotives used in Freight Service, will be handled and rated at the direction of the NMC. 5. Providing HP/ton and/or weather and rail conditions permit, the NMC may authorize movements without a reduction if only one traction motor is disabled / cut-out.						
	3 out	1475 ²	6 ²							
	More than 3 out	0	0							

General Operating Instructions (GOI)

Section 8

Dangerous Goods

TABLE OF CONTENTS

1.0	Car Inspection by Train or Yard Crews.....	112
2.0	Safety Marks (e.g., Placards).....	112
3.0	Documentation.....	113
4.0	Record Position of Placarded Cars.....	116
5.0	Switching.....	117
6.0	Marshalling.....	117
7.0	Emergency Procedures	119
8.0	SPECIAL Dangerous Commodities	121
9.0	Positive Chain of Custody on Cross Border shipments of Alert Cars.....	122

General

- a) **Regulation:** The transportation of dangerous goods is governed by Transport Canada's Transportation of Dangerous Goods Act and Regulations. Violation of these regulations can result in penalties and/or fines to the company and/or to individual employees.
- b) **Guidebook:** A copy of the NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK must be accessible to each crew member while on duty. Refer to this book if required to reference applicable placard types, UN numbers, commodity names, and emergency procedures.
- c) **Definition:** Dangerous goods car - A loaded dangerous goods car or a car containing a residue of dangerous goods.

1.0 Car Inspection by Train or Yard Crews

1.1 Shipper's Siding or Interchange

Before lifting a dangerous goods car from a shipper's siding or interchange:

1. Comply with Pre-departure Inspection Procedures in Section 5, item 4.0 (i.e., item 4.1, Hazardous Conditions; item 4.2, Performing the pre-departure inspection; and 4.3, Hazardous Condition Found).
2. Ensure the car:
 - is not leaking;
 - is equipped with serviceable roller bearings and trucks;
 - is properly placarded (if required, as per item 2.1).

If the car is a tank car, also ensure it has:

- double-shelf couplers;
- dome cover, or manway cover closed;
- bottom outlet cap and plugs applied;
- caps and plugs of all other visible openings in their proper places;
- loading/unloading rack equipment is clear and secured.

If a car does not meet all of these requirements, and the exception cannot be corrected, then **do NOT lift the car**. If you do not lift the car, notify the appropriate person.

1.2 In Transit or in a Yard

Do not move, without authorization, a car found leaking in a yard or in transit.

Follow the Emergency Procedures outlined in item 7.2, Leaks and Spills.

2.0 Safety Marks (e.g., Placards)

2.1 Shipper's Siding or Interchange

Before lifting a placarded car from a shipper's siding or interchange, check the following:

- a) **Placards** are:
 - applied to both sides and both ends of the car, container, or trailer;
 - the same in all locations;
 - right-side up in the diamond position;
 - clearly visible and legible from the ground; and
 - in good condition.
- b) **UN/NA number** is:
 - displayed on placards or orange panels, e.g.,



1203

- the same as indicated on the documents.

Notes:

- Placarded shipments without the required documentation must not be lifted, as per item 3.1.
- Traffic originating from the U.S. or overseas may display placards with words.
- Mixed loads may display danger placards. These placards do **not** display UN numbers.





2.2 In Transit or in Yard

Placards or orange panels found missing, unreadable, or damaged in transit must be replaced:

- at locations where THAT train is given a standing train inspection by Mechanical Forces, and
- prior to being interchanged to another carrier.

2.3 Cars Under Fumigation

Do NOT Enter Cars under fumigation – Cars under fumigation are marked with the following label.

 This unit is under fumigation with	DANGER	 Cette unité est sous fumigation au
(Name of toxic liquid, solid or gas) _____		(Nom du liquide, solide ou gaz toxique) _____
Applied on _____		Depuis le _____
Date _____		Date _____
Time _____		Heure _____
DO NOT ENTER		DÉFENSE D'ENTRER

3.0 Documentation

3.1 Shipper's Siding or at Interchange

Before lifting a dangerous goods car from a shipper's siding or interchange, complete the following steps.

1. Obtain for each car:
 - Shipper supplied document, or
 - Compressed waybill, or
 - Foreign line waybill (interchange only).
2. Verify the following on each document:
 - a) car initials and number,
 - b) shipping name,
 - c) class(es),

Note: A non-numerical class may or may not be provided for some commodities (i.e., combustible liquids and limited quantity or consumer quantity shipments).
 - d) UN/NA number (when displayed),
 - e) a 24-hour emergency telephone number is indicated.

Note: Some smaller shipments, and residue drums and fumigated consignments do **not** require a 24-hour emergency number.
3. Update the appropriate train documents to show the position of all placarded cars. (See item 4.0.)

If a car does not meet all of these requirements, and the exception cannot be corrected, then **do NOT lift the car**. If you do not lift the car, notify the appropriate person.

3.2 At Train Origin and Regular Crew Change Points

- a) Ensure all dangerous goods cars on the train consist have one of the following required documents:
 - Compressed waybill, or
 - TSC-DG8 Documentation Authorization.
 (See item 3.4, Compressed Waybill Missing.)

At crew change points, radio waybills must be replaced with a compressed waybill or a TSC-DG8, unless the Director Operations – NMC provides authority to proceed with an existing radio waybill. (See item 3.7.)

- b) If the first page of the FIT dangerous goods compressed waybill documentation package indicates there are mixed loads on the train requiring shipper supplied documentation (as per item 3.3) then:
 1. Ensure there is a documentation envelope for mixed loads.
 2. Compare the car initials and numbers on the envelope to the car initials and numbers listed in the FIT message.
- c) Emergency response information provided in the FIT documentation is intended as a supplement to the Emergency Response Guidebook. It is not a required document for train movement.

Do not leave without all of the required documents.

3.4 Compressed Waybill Missing

a) “Compressed Waybill Missing” Messages

When a compressed waybill is missing, a message appears in place of the compressed waybill. The compressed waybill missing messages are summarized on the last page of the FIT documentation package. For example:

```
*****
*
*                               ATTENTION                               *
*          DANGEROUS GOODS COMPRESSED WAYBILL(S) MISSING  001 CARS      *
*
* FOR MISSING CANADIAN DOCUMENTS CONTACT TSC WINNIPEG: 1-866-432-6437   *
*
*                               1-866-4-DANGER                          *
*
* FOR MISSING U.S. DOCUMENTS CONTACT TSC MINNEAPOLIS 888-872-8720 1-9-7566 *
*
* CP 00382977                                                           *
*****
```

b) Obtain Documents Before Departing

If the FIT documentation includes a “COMPRESSED WAYBILL MISSING” message, then **before departing** obtain:

- the missing compressed waybills, or
- TSC-DG8 authorization and appropriate shipping document(s). (A TSC-DG8 is the train crew’s authorization to move dangerous goods on a document that is not FIT supplied.)

If the required documents cannot be obtained, then the car(s) must be set off.

3.5 Lifting a Dangerous Goods Car En Route (Except shipper siding or Interchange)

1. Before lifting a dangerous goods car, ensure you have the required documents:
 - Compressed waybill, or
 - TSC-DG8 Documentation Authorization. (See item 3.4.)
 - Documentation envelope for mixed dangerous goods, if applicable. (See item 3.3.)
2. Update the appropriate train documents to show the position of all placarded cars. (See item 4.0.)

3.6 Setting off a Dangerous Goods Car En Route

1. If the setoff was **planned**, deliver a copy of the document to the appropriate location (e.g., the consignee, or point of interchange).
2. If the setoff was **unplanned**, notify the RTC and request instructions. The RTC will specify where to leave the dangerous goods documents.
3. If the car is a **mixed load** of dangerous goods requiring shipper supplied documents, then:
 - i) Open the “Dangerous Commodity Mixed Load Documentation Package;”
 - ii) Extract only the documents for the car(s) set off;
 - iii) Complete and sign the “CAR NUMBERS SET OFF ENROUTE” section of the envelope, including the:
 - date,
 - car number,
 - location,
 - employee name and number.
4. Update the appropriate train documents to show the position of all placarded cars. (See item 4.0.)

3.7 Radio Waybill (Required Documents Missing En Route)

Dangerous goods cars cannot be moved without the required documentation. Occasionally, errors occur and dangerous goods cars depart the origin or crew change point without the required documentation. This error may be identified by the train crew, or by another employee.

Use the following process when a train has departed the train consist origin or crew change point without the required documents.

Documents Discovered Missing while En Route		
Step	Employee	Actions
1.	Train crew, or other employee	Discovers documents are missing and promptly reports this to the RTC.
2.	RTC	<ul style="list-style-type: none"> Obtains documents and relays the required information to the train crew; or If unable to locate the documents, then advises train crew where to set off the car.
3.	Train crew	<ul style="list-style-type: none"> Records information on “Dangerous/Hazardous Materials Radio Waybill;” or Sets off car as per RTC instructions.
4.	Relief crew at next crew change point	<p>Does not move the dangerous goods car until the radio waybill has been replaced by:</p> <ul style="list-style-type: none"> Compressed waybill, or TSC-DG8 Documentation Authorization. <p>Exception: The Director Operations – NMC may authorize continued movement with the existing radio waybill.</p>

3.8 Custody or Control of Documents

Documents or copies must be in the custody or control of:

- the crew, when the shipment is part of a train or any other movement for delivery to customer or interchange.
- the responsible yard office, when the car is in a rail yard for other than repairs,
- the person in charge of a repair track, when the car is there.

In all other cases, the documentation must be at a location designated by the RTC.

4.0 Record Position of Placarded Cars

4.1 Position of Placarded Cars

Train crews shall have in their possession a document indicating the position of each placarded car in their movement. When the position of a dangerous goods car changes (e.g., cars lifted or set off), or a placarded car is placed in the train, update the document to indicate the change. A train consist, switch list, or other prepared document may be used to meet this requirement.

4.2 Information to Show

When using form 125 (or any other appropriate form) to indicate cars lifted en route, show the following information for **loads and residues**:

- car initials and number,
- product name,
- class,
- UN/NA number,
- position from locomotives, and
- SPECIAL dangerous** (if applicable).

5.0 Switching

These requirements are in addition to the restrictions contained in CROR Rule 113 (Coupling to Equipment) and Rule 116 (Running Switch).

Important: Promptly report to the appropriate supervisor any impact suspected of being faster than 6 MPH with, or onto, a dangerous goods car.

5.1 Flat Switching

Do **not** cut off in motion, or couple onto by a car or cars moving under its own momentum:

- a) A loaded dangerous goods car in class:
 - Explosive 1.1 or 1.2, or
 - Poison gas 2.3.
- b) A flat car carrying containers or trailers bearing any placard.

5.2 Humping Operations

A loaded tank car in placard group "C" (see marshalling chart, item 6.3) must be a single car cut over the hump, unless shoved to a coupling or rest. Also, the next car into the same track must be a single car cut unless shoved to a coupling or rest.

6.0 Marshalling**6.1 Application**

These Marshalling restrictions apply to all placarded cars (loads & residues) on movements **exceeding 15 MPH**.

6.2 Check Train Consist Dangerous Commodities Marshalling Messages

Step	Action
1.	Check the train consist "Start of Dangerous Commodity Marshalling Messages" for any marshalling violations.
2.	Verify and correct all violations.
3.	If discrepancies exist between the Dangerous Commodities Marshalling Messages and the marshalling instructions in this item (item 6.0), then comply with the instructions in this item.

6.3 General Marshalling Restrictions (Except Placarded Containers and Trailers Positioned on Flat Cars)

The following marshalling restrictions apply to all placarded dangerous goods cars.





Do **not** marshall a placarded Dangerous Goods car next to:

- an operating locomotive (unless all cars in the movement have a placard);
- any occupied car (unless all other cars are either occupied or have a placard);
- a car equipped with a mechanical heating or cooling device or has a source of ignition, and is in operating mode (This includes but is not limited to mechanical refrigerator units, intermodal generator sets and air repeater cars);
- an open top car when lading protrudes beyond car or lading above car end is liable to shift lengthwise (except packaged and/or banded lumber on a bulkhead flat car provided the top packages do not exceed the bulkhead by more than 50%);
- a loaded flat car (except trailers or containers on flat cars, multi-level auto transport cars, or any car specially equipped with tie down devices for handling vehicles).

Note: When a multi-platform car is used as a buffer car, each platform counts as one car.

Marshalling Chart

The following chart outlines additional restrictions for Placarded Dangerous Goods cars. (This chart does not apply to Placarded containers and trailers positioned on flat cars, item 6.4.)

Dangerous Goods Cars in Group/Class:	Must not be placed next to:		
	Group A	Group B	Group C
Group A: Explosives Classes 1.1 & 1.2 		X	X ⁽¹⁾
Group B: (Infrequently handled. See list below.)	X	X ⁽²⁾	X
Group C: Explosives Classes 1.3 to 1.6,  Classes 2, 3, 4, and 5. 	X ⁽¹⁾	X	
Group D: Classes 6, 7, 8, 9, and mixed loads 	Only general marshalling restrictions (item 6.3) apply.		
Notes: X "must not be next to" restriction (1) not applicable to explosives in Classes 1.3 to 1.6. (2) not applicable if the next car has the same UN number.			
Group B Dangerous Goods (Infrequently handled) UN 1008, CLASS 2.3 UN 1660, CLASS 2.3 UN 1026, CLASS 2.3 UN 1911, CLASS 2.3 UN 1051, CLASS 6.1 UN 1975, CLASS 2.3 UN 1067, CLASS 2.3 UN 2188, CLASS 2.3 UN 1076, CLASS 2.3 UN 2199, CLASS 2.3 UN 1589, CLASS 2.3 UN 2204, CLASS 2.3 UN 1614, CLASS 6.1 UN 3294, CLASS 6.1			

6.4 Marshalling Restrictions - Placarded Containers and Trailers Positioned on Flat Cars

The following marshalling restrictions apply to placarded containers and trailers positioned on flat cars.

- Containers or trailers placarded as "Explosives 1.1 and 1.2" or "Radioactive, Class 7" must **not** be positioned on the first platform next to an operating locomotive.
- Containers or trailers placarded as "Explosives 1.1 and 1.2" must **not** be positioned or marshalled next to a container, trailer, or car that:
 - is equipped with a mechanical heating or cooling device, in **operating mode**
 - has a source of ignition.

(For example: mechanical refrigerator units, intermodal generator sets, and air repeater cars that are operating.)

- For trains destined to the U.S.A., containers or trailers placarded as "Explosives 1.1 and 1.2" must **not** be positioned or marshalled closer than six cars or platforms from the operating locomotive.

Note: When a multi-platform car is used as a buffer car, each platform counts as one car.

6.5 Marshalling Plain Bearing Cars

Loaded Dangerous Goods in Cabooseless Train Operations can be anywhere in the consist, subject to the marshalling restrictions indicated in this section, provided there are no plain bearings on the train ahead of a loaded dangerous goods car.

In addition to the other requirements outlined in items 6.3 and 6.4, loaded dangerous goods cars marshalled behind cars that have plain bearings:

- must be marshalled within the first 2000 feet on trains 4000 feet or less, or;
- must **not** be marshalled in the last 2000 feet on trains over 4000 feet.

6.6 Marshalling U.S.A. Destined Trains

Crews on trains originating in Canada with a destination in the U.S. are governed by the "Trains Moving in the U.S. Marshalling Messages."

8

7.0 Emergency Procedures**7.1 Accidents, Collisions, Derailments**

Use these procedures (a to f) for incidents involving a car, container, or trailer that contains or last contained dangerous goods.

The order in which the steps are completed depends on the incident. After the initial response and initial assessment, many actions are completed simultaneously.

Note: Emergency procedures for leaks and spills are described in item 7.2.

a) Protect and Communicate – Initial Response

Step	Action
1.	Protect train in accordance with CROR and/or Special Instructions. <ul style="list-style-type: none"> • CROR Rule 125, Emergency Communication Procedures; or • CROR Rule 35 Emergency Protection; • CROR Rule 102, Emergency Stop Protection.
2.	En Route, complete emergency call to the RTC. <ul style="list-style-type: none"> • The RTC immediately advises the designated NMC manager. <p>In yards, contact the responsible supervisor.</p> <ul style="list-style-type: none"> • The supervisor calls: <ul style="list-style-type: none"> – Calgary NMC Emergency Number (1-800-795-7851)

b) Assess Dangerous Goods Hazard

Step	Action
1.	Visually inspect the incident, from the cab of the locomotive if possible.
2.	Identify dangerous goods involved using the train documents: <ul style="list-style-type: none"> • Compressed waybill, or • TSC-DG8 Documentation Authorization. (See item 3.4). • Documentation envelope for mixed dangerous goods, if applicable. (See item 3.3.)
3.	Use the Emergency Response Guidebook to identify protective actions. To use the Guidebook: <ol style="list-style-type: none"> Find the material's Guide number using the: <ul style="list-style-type: none"> – UN Number (yellow-bordered pages), OR – Shipping name (blue-bordered pages). Use the Guide number to find the "Public Safety" instructions in the orange-bordered pages. <p>(Note: The emergency response information in the train documents may be used as a supplement to the Emergency Response Guidebook.)</p>

c) Assess Site Hazards

Step	Action
1.	If the dangerous goods hazard does not prevent you from approaching the derailed cars and it is necessary to approach the cars, then assess the site hazards. <ul style="list-style-type: none"> • Physical: slip, trip, fall, sharp objects, moving equipment, shifting loads, or shifting track material. • Chemical: from derailed cars, or damaged underground utility or pipeline. • Electrical: power lines (over-head or underground) and fiber optic cables. (See Section 11, item 10.0.) • Other: water, embankments, bridges, etc.
2.	Keep away from hazards to avoid injury.
3.	Avoid any unnecessary exposure to smoke or fumes.
4.	Keep all open flames, including fusees and smoking material, away from the incident scene.

Continued on next page...

d) Rescue and Secure

Step	Action
5.	If it can be done safely, rescue the injured and move them to a safe place. Apply first aid or secure medical assistance.
6.	Keep public well away from the scene. If necessary, secure help from police forces.
7.	If the locomotives are not directly involved in the accident, the train should be cut as close as safely possible and cars removed a safe distance.

e) Communicate Details

Use the shipping document, compressed waybill, or the train consist to provide the following information for cars containing dangerous goods, or residue cars:

- i) location (Subdivision and mileage),
- ii) number of cars involved and condition,
- iii) car initials and number,
- iv) weather conditions,
- v) any additional information, as requested.

f) Documents

KEEP all documents until relieved of that responsibility by a CP Officer.

When a public security official (e.g., police officer, fire fighter) arrives at the scene, attempt to contact the official and assist him/her in examining the:

- FIT supplied dangerous goods documents/shipping document(s),
- Train consist, form 125, or other appropriate form, and
- Emergency Response Information.

7.2 Leaks and Spills

If you suspect a car containing dangerous goods is leaking, or you see a dangerous goods spill:

Step	Action
1.	Get clear of the spill or leak immediately, upwind if possible. Avoid low-lying areas.
2.	From a safe location, notify others in the area as soon as possible.
3.	En Route, notify the RTC and use the shipping document, compressed waybill, or the train consist to provide the following information: <ol style="list-style-type: none"> i) location, ii) car initials and number, iii) weather conditions, iv) additional information requested. <p>In the yard, contact the responsible supervisor.</p>
4.	Keep the area clear of all personnel except Emergency Responders.
5.	Do not move, without authorization, a car found leaking in a yard or in transit.

7.3 Cars Under Fumigation

An accident, collision, derailment, spill or leak involving a car under fumigation does **not** require special considerations for dangerous goods. However, **ensure no one enters these cars.**

8.0 SPECIAL Dangerous Commodities

8.1 Identifying SPECIAL Dangerous Commodities

To alert all concerned that a **SPECIAL dangerous** commodity is being handled, the load may be identified as follows:

- a) The first line of messages on the train consist displays either:
 - “THIS TRAIN HANDLING **SPECIAL DANGEROUS** COMMODITIES,” or
 - “TRAIN IS CARRYING **SPECIAL DANGEROUS** COMMODITIES.”
- b) The first page of the compressed waybill package displays “TRAIN IS CARRYING **SPECIAL DANGEROUS** COMMODITIES,”
- c) Form 125 indicates **SPECIAL dangerous** lifted en route.

8.2 Instructions - References

The following references direct you to other instructions that apply when handling **SPECIAL dangerous** commodities.

Topic	Reference
<ul style="list-style-type: none"> • Speed restrictions, and • Locations where inspection is required. 	Time Table footnotes item 3.0, Dangerous Commodities and CROR Rule 104(p).
Procedures at locations where inspection is required.	Section 5, item 1.1, Inspecting SPECIAL Dangerous Commodities at Locations without HBD
Inspection required at HBD locations identified with double asterisks (**) in the time table when: <ul style="list-style-type: none"> • the HBD is withdrawn from service, • the HBD reports "System Not Repeat Not Working" or is otherwise known to be inoperative, • any part of the movement passes the HBD at 8 MPH or less, • no message is received, from the HBD or • the HBD reports incorrect axle count and system reports No alarms. 	GOI, Section 5, item 27.0.

9.0 Positive Chain of Custody on Cross Border shipments of Alert Cars

9.1 Positive Chain of Custody

US Security Regulations require carriers to provide “Positive Chain of Custody”, including attending or maintaining positive control, performing security inspections and “documenting transfers” of loaded shipments of rail security sensitive materials (“Alert” shipments) between carriers and:

- US Shippers
- Other rail carriers
- US Receivers located in “high threat urban areas”

This regulation applies in the US only and does NOT apply to CP-to-CP transfers or transfers between CP and DME. **Canadian crews performing interchanges of Alert Cars with foreign carriers at the Canada / US Border or in the US will be required to follow the procedures as outlined below.**

In order to accommodate the regulatory requirements, a section has been added to the Outbound Wheel Report / Train Consist. This section will appear on Canadian and US Train Documents but is only required as outlined in these procedures.

If you have any questions regarding if these changes apply to your terminal, please contact your immediate Supervisor.

9.2 Alert Cars

Alert cars include loads of:

- Tank cars containing poisonous inhalation (PIH) commodities
- Cars containing more than 2,268 kg (5,000 lbs) of a Division 1.1, 1.2, or 1.3 (explosive) material
- Cars containing a highway route-controlled quantity of a Class 7 (radioactive) material shipped under any of the following HazMat STCCs or Hazardous Materials Response Codes — 4929142, 4929143, 4929144, 4929147
- May also be referred to as Rail Security Sensitive Materials (RSSM)

Identifying Alert Shipments

Information to identify Alert Cars & Commodities will be available:

- On the Outbound Wheel Report / Train List, listed in the “Document the Transfer” section.
- Identified as “Alert Load” in the sequenced list of the cars on the Outbound Wheel Report.
- On the Compressed Waybill.
- On a shipper supplied document, such as a Bill of Lading.
 - Information is included as part of the hazardous materials details.
 - May be displayed in various locations on the document.

Identifying PIH Shipments

PIH commodities include but are not limited to:

- Materials that contain the phrase “Poison-Inhalation Hazard,” “PIH,” “Toxic Inhalation Hazard,” or “TIH” on the shipping documents or compressed waybills.
- Materials identified or placarded as Class 2.3 or Class 6.1.
- The following commodities:
 - UN #1005 Anhydrous Ammonia
 - UN #1017 Chlorine
 - UN #1079 Sulfur Dioxide
- In an electronic document package PIH shipments are identified as “PIH” in the sequenced list of the cars on the Outbound Wheel Report

9.3 Acceptance or Transportation of Alert Shipments

Only accept or transport loaded Alert shipments that conform to:

- The current General Operating Instructions (GOI), Section 8 **AND**
- These instructions

9.4 Interchange Transfers

CP Train Crew to a Foreign Carrier in the US or at Cross Border Locations to the US

1. Prior to delivering a train with dangerous goods cars, the conductor must:

- Review the Outbound Wheel Report or other shipping documents for any “Alert Cars”.
- If “Alert Cars” are being delivered in the US or at cross border locations to the US:
 - As soon as practicable or if status changes en-route, advise the responsible CP RTC/Dispatcher, Yard Master or other employee in charge that your train is carrying “Alert Cars” and may require special handling
 - Prior to delivery to the foreign carrier, contact the foreign carrier’s designated on-site representative to notify them that the train requires special handling and to confirm that the transfer is attended. The on-site representative may be a Yard Master, train crew member or other designated representative.

“Document the Transfer” on the Outbound Wheel Report / Train List as per item 9.5.

2. Upon arrival at final terminal, fax the completed Outbound Wheel Report / Train Consist to the CSF (Customer Service Finance, formerly CST/CSO).

Foreign Carrier to a CP Train Crew in the US

1. Prior to receiving or taking charge of a train or dangerous goods cars in the US, the conductor must:

- Contact the foreign carrier’s designated on-site representative to determine if the train requires special handling or review shipping documents for any “Alert Cars”.

The Outbound Wheel Report, compressed waybill or other prepared document may be used to meet this requirement.

- If “Alert Cars” are included in the train:
 - Contact the foreign carrier’s designated on-site representative and confirm that the transfer is attended. The on-site representative may be a Yard Master, train crew member or other designated representative.

Perform a Car Inspection if required under General Operating Instructions (GOI) Section 8. If a car inspection is required, a security inspection must be included.

“Document the Transfer” on the Outbound Wheel Report / Train List as per item 9.5.

- Before departing or if status changes en-route, advise the responsible CP RTC/Dispatcher, Yard Master or other employee in charge that your train is carrying “Alert Cars” and may require special handling

2. Upon arrival at final terminal, fax the completed Outbound Wheel Report / Train List form to the CSF.

Note: In the application of 9.3, the crew **MUST CONTACT** the RTC/Dispatcher, YARD MASTER or other employee in charge as soon as practicable and be governed by their instructions, if the train crew determines that:

- The Alert Car **CANNOT BE DELIVERED**
- The crew will meet Hours of Service limit en-route while in the US

9.5 Attendance

If required, an employee or authorized representative attends an Alert Car by:

- Being physically located on site in “reasonable proximity” to the Alert Car AND
- Capable of promptly responding to unauthorized access or activity at or near the rail car AND
- Responding immediately to any unauthorized access or activity at or near the Alert car either personally or by contacting law enforcement or other authorities

“Reasonable Proximity” is classified as follows for:

A) Cars in a Train:

- Train crewmembers that:
 - Are located on or near the train.
 - May be located at the front of the train and physically unable to visually observe every rail car.

B) Cars NOT in a Train:

- An employee or authorized individual has within his or her field of vision either:
 - the rail car OR the area surrounding the rail car, including access paths to the car.

9.6 Document the Transfer

CP employees who transfer loaded Alert shipments to another party are responsible for completing a “Positive Chain of Custody” Report. The report must be filled out and faxed to the CSF (Customer Service Finance, formerly CST/CSO) along with any other required paperwork.

The conductor must record the following information in the section on the Outbound Wheel Report (OWR) / Train Consist:

- Car initial and number
- CP Conductor’s first and last name
- First and last name of the transfer party’s designated, on-site representative (Shipper, Receiver or Foreign Carrier)
- Date and time the transfer was completed
- Location of transfer (track ID)
- If additional room is required, information should be recorded on the F125

Fax the completed OWR / Train Consist to the CSF with other required crew documents.

9.7 Security Inspection Procedures

In conjunction with the inspections required under General Operating Instructions, Section 8, from ground level, inspect all loaded Alert rail cars for signs of tampering, such as suspicious or dangerous items or items that do not belong on trains as per Section 11, item 3.0.

General Operating Instructions (GOI)

Section 9

Passenger Train Procedures

TABLE OF CONTENTS

1.0	Passenger Train Emergency Procedures - General	126
2.0	Medical Emergency	126
3.0	On-Board Fire	127
4.0	Bomb or CBRN Weapons Threat	127
5.0	Derailment	129
6.0	Passenger Evacuation Guidelines	129
7.0	Passenger and Mixed Trains - General	132
8.0	Vestibule Doors, Platforms, Curtains, Guard Rails, Side and End Gates, Tail Gates, Chains and Bars	133
9.0	Safety Inspections	134
10.0	Pre-departure Inspections	134
11.0	Hazardous Condition	134

1.0 Passenger Train Emergency Procedures - General

- 1.1** All on board passenger train employees must be trained and qualified in emergency communication procedures use of emergency equipment and supplies, and emergency response procedures, in accordance with CP's Passenger Handling Safety Plan.
- 1.2** All on board passenger train employees must make themselves familiar with the locations of emergency equipment and supplies, and with the operation of emergency exit windows and doors. These may differ with various car designs.
- 1.3** Every passenger train must have one employee designated as the "Person in Charge" who will have primary responsibility for the safety of the passengers and emergency response procedures. This would normally be the conductor, but it could be another designated on board employee. All on board employees must know who is the Person in Charge.
- 1.4** The Person in Charge, or other designated employee, must be trained and prepared to assist disabled persons on passenger trains when any car(s) are so equipped.
- 1.5** The Person in Charge, or other designated employee, must ensure that passengers are provided with appropriate safety briefing materials. Methods for accomplishing this include:
- on-board announcements
 - video presentations
 - strategically placed placards
 - descriptive handouts or ticket stubs
- 1.6** The NMC is responsible for assisting in emergencies by providing any required outside emergency response, for consulting CP's Passenger Handling Safety Plan and the CP Security Management Plan, and for consulting and communicating with any other affected railways or passenger service providers.

2.0 Medical Emergency

- 2.1** Employees who have completed an accredited first-aid course and hold a current first-aid certificate are required to render emergency first-aid until arrival of medical help.
- 2.2** In the event of a medical emergency the following steps should be taken:
- Assess hazards and make the area safe for yourself and others.
 - Identify yourself as a First Aider (if qualified).
 - Take charge of the situation and arrange for help (e.g. Conductor, Service Manager, Doctor etc.)
 - Assess the casualty for life-threatening conditions;
 - History (medical problems)
 - Signs (what you see)
 - Symptoms (how the casualty feels).
 - Establish priorities in the following order, and give first-aid for;
 - Stopped breathing
 - Severe bleeding
 - Shock & unconsciousness. (First-aid kits, stretchers are normally available on passenger trains, oxygen kits are available on VIA trains.)
 - Request medical aid if required.
- 2.3** Once the medical condition is assessed and a need is established for external medical resources, the person in charge, or other on board employee, using correct radio procedures, must immediately contact the RTC and relay the following information:
- Type of assistance required (ambulance, doctor etc.)
 - State of the person (conscious or unconscious.)
 - Gender.
 - Age (approximate.)
 - Condition of the person (bleeding, suspected heart attack etc.)
 - Location of the train. (If possible nearest intersecting street or known landmark as well as railway mileage. **THIS INFORMATION IS VITAL FOR AMBULANCE AND EMERGENCY PERSONNEL.**)
 - Location within train (car number and position in consist.)

- 2.4 The RTC will arrange for the medical assistance and will relay the information to the train. The RTC will also arrange to inform the appropriate officials of the emergency.

3.0 On-Board Fire

- 3.1 In the event of a fire, the protection of life must be of main concern to all employees working on the train.

- 3.2 If a fire is seen, smoke smelled or if a passenger reports a fire, the following steps must be taken:

- STOP may be required. Remember, continued movement of the train may make the fire worse.
- Turn off the car's blower system, to prevent the spread of smoke to other parts of the car.
- Notify other employees on the train that a serious problem exists and assistance is required. (The exact words "IMMEDIATE ASSISTANCE" must be used. This is a code to alert all employees on the train that an emergency exists without alarming the passengers.)
- IMMEDIATELY RELOCATE the passengers to an adjacent car, preferably toward the locomotive. (Evacuation requiring movement of the passengers onto the roadbed must be avoided unless no other means of evacuation is possible.)
- The person in charge should proceed immediately to the affected car to coordinate the activities.
- Conduct a quick search of the car, including lavatories, to ensure all passengers have left.
- If the fire appears controllable, use the nearest appropriate fire extinguisher to extinguish the fire.
- If the fire appears to be out of control and it is unlikely it can be controlled, separate the train so as to isolate the affected car.
- Contact the RTC immediately, giving particulars of the situation and the action being taken. The RTC will first arrange to protect the train, then arrange for the local fire department to assist.

3.3 Portable Fire Extinguisher Operating Instructions

- a) Locate and remove fire extinguisher from its housing
- b) Verify by gauge that it is charged (do not proceed unless needle is at 12:00 o'clock)
- c) Approach fire at a close, but safe distance. Ensure you have an escape route behind you. Remove safety pin.
- d) Crouch down to better see the flames.
- e) Aim nozzle at base of fire and activate the extinguisher.
- f) Spray in side to side motion until fire is extinguished (average discharge time is 8 seconds).
- g) If fire is not readily controllable, leave car immediately.
- h) Report discharge of extinguisher on appropriate defect form.

4.0 Bomb or CBRN Weapons Threat

Bomb or Chemical, Biological, Radiological, or Nuclear (CBRN) weapons threats can be divided into two categories, specific and non-specific. Specific threats contain more detailed information, whereas non-specific threats contain little information.

4.1 Specific Threat

When the conductor or person in charge receives a radio transmission from the RTC Office stating "I HAVE A SECURITY MESSAGE FOR THE CONDUCTOR," he will isolate himself from the passengers and reply "I AM READY TO RECEIVE THE SECURITY MESSAGE." Once informed of the threat, the conductor will:

- With the assistance of the RTC and the locomotive engineer, arrange to have the train stopped at a safe location.
- Initiate evacuation procedures (refer to subsection 6.0) ensuring that passengers bring their personal belongings with them.

- Use the following announcement to initiate the emergency:

“Attention passengers: A security alert has been received. Passengers must not use any electronic device until further advised. We will be stopping at (or returning to) _____ upon arrival, ALL passengers are requested to leave the train, taking all personal belongings with them. Passengers are requested to stay well clear of the train, clear of adjacent tracks and off the right of way”. (When conditions or terrain will permit, passengers should be requested to move away from the railway to a point not less than 1000 feet from the line of railway.)
- Arrange to have all available employees assist in an orderly and safe evacuation.
- After all passengers have detrained and provided CROR rules permit, arrange to either pull the train ahead or move backward to clear the area.
- Upon clearing the area, detrain and stand clear of the train but in a position to stop any passengers from returning and await the appropriate Law Enforcement Agency before conducting a thorough search of the train.
- Should a suspect device or package be found prior to the arrival of Police
 - DO NOT TOUCH IT.
 - SECURE THE AREA AND BE PREPARED TO DIRECT POLICE TO ITS LOCATION. (Refer to item 4.3 for additional information)
 - DO NOT USE YOUR RADIO OR CELLULAR PHONE UNLESS AT LEAST 300 FEET FROM THE OBJECT.
 - DO NOT USE AN ENGINE OR CONTROL CAB RADIO UNLESS AT LEAST 300 FEET FROM THE OBJECT.
- Assist Law Enforcement Officers by establishing a safe route when the object is being removed from the site.
- After the train has been searched and declared safe, make the following announcement cancelling the emergency:

“Attention passengers: The train has been searched and the security alert no longer exists. All passengers may reboard the train.”
- Advise the attending Police Agency and RTC of any passenger who refuses to

reboard the train and the reason for the refusal.

Train Doors

During the search of a train, doors should be left open to help minimize the possible effects of an explosion.

Restrictions in Use of Radio

Some explosive devices are activated by radio transmissions. While searching, radio usage must be kept to a minimum. If a suspected package is found, the minimum safe distance for portable radio or cellular phone or engine or control (cab) car radio use is 300 feet..

Communication

Maintain communication with the RTC at all times.

4.2 Non-Specific Threat

Once the conductor has been informed of a NON-SPECIFIC bomb threat, he will initiate a discreet search of the train as follows. (Stopping of the train may not be required.)

Where to Search

The search should begin in the area or car identified by the caller or, if the caller does not give an exact location, in those areas which are uncontrolled or not monitored and to which the public has free access. Special attention should be given to:

- washrooms,
- vestibules,
- baggage racks,
- waste baskets,
- under seats.

The search

Prior to entering the car, conduct a visual examination of the interior for clouds of smoke, mist, gas, or vapour. Also look for signs of passengers being incapacitated or other unusual activity.

If the car appears to be safe to enter, do so and conduct a visual examination of the area for anything suspicious, then:

- Stand at opposite ends of the car and try to detect any unusual or ticking noise. (This will only be effective if the car is stopped and empty.)

- DO NOT ACTIVATE ANY ELECTRICAL SWITCHES UNLESS ABSOLUTELY NECESSARY
- If nothing is detected, begin the visual examination in the following manner:
 - a) floor to waist level, then
 - b) waist level to top of head, then
 - c) from top of head to and including the ceiling. (All compartments in the car should be checked to ensure they are secure and not tampered with.)
- If a suspicious object is found, it must not be assumed that the remaining area is clear. Refer to item 4.3

What to look for

Materials or objects which are foreign to the area being searched, such as:

- a backpack, briefcase or suitcase left in a washroom or other unsecured or unattended area,
- a hidden or abandoned box or parcel,
- an object emitting an unusual or ticking sound,
- an object emitting a peculiar odour, mist, gas or vapour.

4.3 What to do if a suspicious object is found

- DO NOT TOUCH IT.
- DO NOT USE YOUR RADIO TRANSMITTER, UNLESS AT THE ESTABLISHED SAFE DISTANCE (300 feet for portable radios or cellular phones and for engine or control (cab) car radios).
- Attempt to determine if a passenger in the immediate area has any knowledge of the item.
- If ownership of the suspect item is not established;
 - a) isolate the area by preventing further access;
 - b) evacuate all passengers to other cars;
 - c) instruct all remaining personnel to evacuate the area;
 - d) inform the RTC of location and description of the article found. The RTC

will inform the Law Enforcement Agencies of your discovery;

- e) be governed by instructions from the RTC;
- f) be prepared to implement guidelines contained in item 4.1 Specific Threat.

5.0 Derailment

Each derailment presents a different and unique situation. The conductor will decide on the safest method of evacuation if evacuation is necessary. If the cars remain upright, the safest location for the passengers may be inside the cars. If the car is on its side, or in a dangerous location, evacuation will be necessary.

Remember

- Remain calm.
- The conductor will coordinate the evacuation.
- Notify other employees that a serious situation exists by using the words “IMMEDIATE ASSISTANCE” and give the specific location.
- Inform passengers of the emergency and explain the evacuation plan.
- Assist in the evacuation of the passengers.
- Double check that all passengers have vacated the equipment.

6.0 Passenger Evacuation Guidelines

The following information pertaining to evacuation guidelines has been prepared to familiarize employees with methods of quickly and efficiently evacuating rail passenger cars in the event of an emergency.

Note: All emergencies cannot be covered in these guidelines, therefore, the sequence of evacuation procedures and method of handling may have to be changed to suit the situation. Railway companies may issue special instructions where relevant, e.g. tunnels, bridges. These procedures are in addition to all other requirements defined in the Operating Rules, Time Tables, and General Operating Instructions, which must be adhered to at all times by operating personnel regardless of the nature of the emergency.

- 6.1** It is important that both the conductor and locomotive engineer be advised as quickly as possible of the nature of the emergency which may make it necessary to evacuate the train. This is of prime importance so that the conductor can decide whether evacuation is necessary and so that the locomotive engineer can bring the train to a stop at a location where evacuation can safely take place.
- 6.2** Provide Emergency Stop Protection (CROR, Rule 102) so that necessary steps can immediately be taken by the RTC and crews of other trains to afford the distressed train full protection and provide assistance.
- 6.3** While these emergency procedures identify certain responsibility with the conductor, it may be necessary because of injury or other extenuating circumstances, for the locomotive engineer or Train Service Employees to assume the role of the conductor in coordinating the evacuation.
- 6.4** The method of evacuation chosen must be one offering maximum passenger safety and minimum passenger inconvenience.
- Priority of methods for evacuation
- From car to another car
 - From train to station platform
 - From train to public or private grade crossing
 - From train to another train
 - From train to roadbed
- 6.5** Since the location of emergency equipment and emergency exits can differ depending on the type of equipment, location of these emergency features must be checked by crew members as soon as possible after reporting for duty.
- 6.6** In order to recall the appropriate response to an emergency, and to minimize passenger panic, it is essential that crew members remain calm.

Stopping Locations

The locomotive engineer, in consultation with the RTC and the Person in Charge, will decide on the best location to stop, based on the

urgency of the situation and the immediate safety of all passengers.

If the nature of the emergency and the opportunity permit, the train should be stopped at a location which will allow passengers to detrain safely and quickly move away from the immediate area.

Priority of locations for detrainning passengers

- a station platform,
- a road crossing at grade, or
- an open area away from the roadbed.

Locomotive engineer should **avoid stopping**

- in a tunnel,
- in a deep cut,
- along side a sharply sloping embankment, or
- on a bridge.

6.7 Evacuation Procedure

When the decision has been made to stop the train, the conductor must

- ensure that all necessary steps are/will be taken to protect the train.
- ensure that any closely approaching trains or engines on adjacent tracks are contacted so as not to endanger the evacuation. This protection will be arranged in cooperation with the locomotive engineer, using radio contact when possible. Both must be sure that protection has been arranged.
- When the decision has been made to evacuate the passengers, make the announcement, briefly advising the passengers of the nature of the emergency and directions for the method of evacuation. When it is necessary to evacuate more cars than the crew members can reasonably handle, the conductor should request assistance from passengers.
- Advise all passengers to stay well clear of adjacent tracks and off the railway right of way.

All announcements should be made slowly and distinctly in a manner which will dispel anxiety.

Passenger Train Emergency Procedures

Incident Check List (For RTC or other control centre)

HAVE YOU DONE THE FOLLOWING?

- Recorded**
 - date
 - time
 - person (including occupation if possible) reporting the incident
- Determined**
 - location (railway mileage, plus nearest intersecting street or landmark)
 - type of incident
 - Medical
 - Fire
 - Bomb Threat (specific or non specific)
 - Derailment
- Established**
 - what assistance is required
 - Ambulance
 - Doctor/Hospital
 - Rescue forces
 - Police/Bomb squad
 - Auxiliary
 - Fire department
- Ordered**
 - required assistance
- Determined**
 - is evacuation necessary
 - What car
 - What stopping location
 - What means of transport
- Ordered**
 - transport, if required
- Informed**
 - appropriate railway officers

7.0 Passenger and Mixed Trains - General

- 7.1** Air brakes must be in service and automatic brake used:
- when handling or switching passenger equipment occupied by passengers;
 - when other than an engine is being coupled to passenger equipment occupied by passengers.
- 7.2** Before uncoupling passenger equipment:
- disconnect all trainlines (including those for public address systems and other electrical circuits);
 - disconnect all diaphragm curtains.
- 7.3** Before coupling to passenger equipment occupied by passengers, OR when passenger equipment occupied by passengers is coupled to other equipment OR is placed against stop block:
- stop must be made, not more than 12 feet nor less than 6 feet from the cars to be coupled to or moved, OR from stop block;
 - upon the proper signal, coupling must be made carefully to avoid shock.
- 7.4** After a coupling has been made to passenger, freight, or any auxiliary equipment AND before movement is made in either direction:
- slack must be taken carefully to ensure that a proper coupling has been made.
- 7.5** When a train carrying passengers encounters an unusual delay enroute:
- conductor or trainman must announce to the passengers the reason for and expected duration of the delay.
- 7.6** Instructions for 2 Pipe Air Brake System on CP Business Cars (See list Section 7 item 21.1)
The main reservoir hose must be attached between the locomotive and business cars to maintain the braking integrity.
For reference, items 22.5 and 22.6 are provided and apply to trains handling these cars.
- Note:** CP Business cars with 2-pipe brake systems should not be marshaled at the rear of trains with only a single brake pipe unless run-around hoses are provided for main reservoir air, or unless specifically authorized by Regulatory Affairs.

Section 7, Items 22.5 and 22.6.**22.5 Train Air Brake Test**

- a) *Before performing a train air brake test:*
- Supply main reservoir pressure to all cars in the train.
 - Verify there is sufficient main reservoir pipe on the rear car.
 - i) At a **safety inspection locations** verify with car department personnel that a permanent or portable gauge on rear car indicates main reservoir pressure is at least 105 psi, **OR**
 - ii) At **other locations**, where a gauge is not available, verify by completing the following steps:
 1. Firmly grasp the main reservoir hose on the rear car.
 2. **CAREFULLY** crack open the trailing main reservoir valve.
 3. Listen for the sound of pressurized air.
 4. Close the valve.
- b) *Complete the brake test as per Section 13, items 5.2 and 5.3.*
- c) *At crew change points, the outgoing crew may confirm the integrity of the main reservoir air with the incoming crew.*

22.6 Uncoupling/Coupling

- a) *Before uncoupling from cars with a 2 pipe air brake system, close the main reservoir pipe valves on the locomotive and car.*
- Do not part the main reservoir hoses by hand.
 - In regard to brake pipe angle cocks, comply with Section 14, item 2.0 (*Uncoupling and Leaving a Portion of a Train Standing with Emergency Air Brakes Applied*).
- b) *When coupling or uncoupling one business car from another, handle main reservoir pipe and brake pipe as per items 22.6 a) and 22.5, above.*
- If there are electric cables, communication cables, or other compressed air connections between the cars, be governed by instructions from the person in charge (e.g., train manager, road manager, or Mechanical Services employee).

8.0 Vestibule Doors, Platforms, Curtains, Guard Rails, Side and End Gates, Tail Gates, Chains and Bars

8.1 Two Tracks: Right-Hand Operation

When running:

- all vestibule doors and platforms must be kept closed.

Note: On suburban trains not equipped with remote control doors, vestibule doors and platforms on right hand side only may be kept open.

When standing:

- vestibule doors and platforms on right hand side only may be opened, except when necessary to open those on left hand side to receive or discharge passengers.

8.2 Two Tracks: Left-Hand Operation

When running:

- all vestibule doors and platforms must be kept closed.

Note: On suburban trains not equipped with remote control doors, vestibule doors and platforms on left hand side only may be kept open.

When standing:

- vestibule doors and platforms on left hand side only may be opened, except when necessary to open those on right hand side to receive or discharge passengers.

8.3 Single Track

When running:

- all vestibule doors and platforms must be kept closed.

Note: On suburban trains not equipped with remote control doors, vestibule doors and platforms may be kept open.

8.4 Guard Rails or Side Gates

These appliances must be handled as prescribed for the handling of vestibule doors and platforms.

8.5 Vestibule Curtains

These appliances must be kept drawn and securely fastened, except during switching operations.

8.6 Tail Gates, Chains or Bars

- a) The appliance at the rear of the last passenger carrying car on the train must be kept closed and securely fastened at all times.
- b) When Rail Diesel Cars (RDC) are used in multiple operation OR used as coaches in conventional trains:
 - end vestibule doors must be kept closed and safety chains connected between the cars when in motion;
 - bars in vestibules must be in place, except when vestibules are open.

8.7 The regulations will be considered complied with when vestibule doors and platforms, side gates or guard rails (if required by these regulations to be kept closed when running) are closed as the train moves away from the stopping point and remain closed until nearing the next stopping point, or unless a trainman is on duty at the opening.

8.8 When the car immediately ahead of the first passenger carrying car is of the non-diaphragm type:

- the tail gate, chain or crossbar at the forward end of the passenger carrying car must be kept in closed position while the train is in motion.

9.0 Safety Inspections

At those locations where a passenger train is made up, where a passenger train has laid over more than 8 hours without an inspection, or where a passenger car is added to a train, a safety inspection must be performed by a certified car inspector, or a pre-departure inspection by the conductor or the locomotive engineer is required.

If a safety inspection is performed by a certified car inspector, the conductor or the engineer of the passenger train must be notified, verbally or in writing, that the inspection was completed and the nature of any safety defects (if any) moving in the train.

10.0 Pre-departure Inspections

At those locations listed in Item 9.0 where a safety inspection has not been completed, the conductor or other qualified employee must perform a pre-departure inspection to detect hazardous conditions that may exist, including:

- (a) car body leaning or listing to the side;
- (b) car body sagging downward;
- (c) car body positioned improperly on the truck;
- (d) object dragging below the car body;
- (e) object extending from the side of the car body;
- (f) side door does not open or close, a double door that does not have at least one section that opens and closes, and end door does not open;
- (g) broken or missing safety appliance;
- (h) insecure coupling;
- (i) overheated wheel or journal;
- (j) broken or cracked wheel;
- (k) brake that fails to release;
- (l) any other apparent condition likely to cause accident or casualty before the train arrives at its destination;
- (m) all safety equipment and supplies are intact; and
- (n) all safety systems function as intended.

11.0 Hazardous Condition

When a pre-departure inspection reveals a hazardous condition that may affect safe operation, the Person in Charge of the train shall take appropriate action to eliminate potential danger by:

- (a) correcting the condition; or
- (b) reducing the speed of the train; or
- (c) vacating passengers from that car; or
- (d) removing the defective car from the train; or
- (e) taking such other action as is necessary to ensure the continued safe operation, and
- (f) record and report any defects to the proper authority for repair.

General Operating Instructions (GOI)

Section 10

Dimensional Traffic

TABLE OF CONTENTS

1.0	General.....	136
2.0	Protection Notices	136
3.0	Classification	142
4.0	General Restrictions	143
5.0	Handling Procedures	146
6.0	GBO	148

DIMENSIONAL TRAFFIC

1.0 General

Wherever the term “train” appears herein, it also applies to an engines and transfers. Wherever the term “protection notice” appears herein, it also applies to “blanket clearance.”

- 1.1 A dimensional shipment is one which exceeds the maximum standards of size, weight, and/or height of centre of gravity as set out by AAR loading standards.

Cars which often exceed these maximum size standards are:

Length: Flat cars loaded with pipe, beams, and poles, etc.

Width: Flat cars loaded with large machinery, transformers, boilers, etc.

Height: Piggyback (T.O.F.C.) loads, high cube box cars, multi-level auto cars and double stacked container shipments, etc.

Weight: Maximum standard for weight on CP is 286,000 pounds gross weight per 4 axle car. The maximum standard does not apply to cars less than 42 feet. (See GOI Section 7 for details)

Maximum standard for height of centre of gravity on CP is a combined centre of gravity of 98" above top of rail.

2.0 Protection Notices

Note: A protection notice affords protection only upon Main Tracks, Sidings, Interchange Tracks, or other tracks specifically identified in the protection notice.

- 2.1 Format of the protection notice has been divided into 6 sections:

“Section 1”: Lists all of the S2MR IDs and e-mail addresses which receive a copy. Specifies the file number, the classification, and indicates if the shipment is governed by Specific Restrictions.

“Section 2”: Specifies the date the Protection Notice was issued. Specifies the characteristics of the shipment, including the car number(s), car marshalling, type of lading, shipper/origin, consignee/destination, full route and CP routing.

“Section 3”: Specifies the measurements of the shipment: height, width, length, gross weight, centre of gravity from the truck centre and the combined centre of gravity.

“Section 4”: Specifies the subdivision name and the mileage points between which the protection notice applies on the subdivision. Specifies the Classification of the shipment based on the effective width, which is also shown on the train consist in a “Code 6 Instruction Message.”

“Section 5”: Specifies the “Specific Restrictions” that apply to a load at specific locations along its routing. They are listed by mileage in the sequence in which they will be encountered. Some examples are: reduce speed over bridges or passing specific obstructions; stop, examine and proceed with crew observing the movement; and special marshalling.

“Section 6”: Specifies the “Code 6 Instruction message” and file number of the Protection Notice. The “Code 6 Instruction message” on the train consist must be exactly as shown in Section 6 of the Protection Notice.

On the next three pages is an example of a Protection Notice which is issued by the Clearance Bureau authorizing movement of dimensional traffic.

- 2.2 All dimensional traffic, with the following exceptions, must be protected by a protection notice:

- a) **Open top multi-level traffic** cleared by authority of Chart “A” over CP lines. Chart “A” is available at yard offices and Rail Traffic Control Centres. Reference to this chart will be made in “Code 6 Instruction Message” of the train consist.
- b) **Piggyback flat cars** loaded with truck trailers not exceeding 17 ft 6 ins ATR (Above Top of Rail) by 8 ft 6 ins wide. This traffic can be handled without restriction over CP, except prohibited on the South track of the Windsor/Detroit tunnel between mile 112.2 and mile 113.8 Windsor Subdivision.
- c) **Fully enclosed** (roof, sides and ends) multi-level traffic, not exceeding 19 ft 1in ATR (Above Top of Rail). This traffic can be handled without restriction on CP, except at the locations shown in Time Table footnotes.

continued on page 140



Protection Notice (CN protection will be included where required)

SECTION 1

THIS PROTECTION NOTICE HAS BEEN ISSUED TO THE FOLLOWING S2MR IDS:

#OM0141 CWR1001 HHS0146 HHS0156 HHS0157 HHS0178 HHS0192 HHS0202
 HHS0282 HHS0313 HHS0319 HHS0474 HHS0495 JON0079 KOH0005 NMC0007
 NMC0009 NMC0010 NMC0033 NMC0034 NMC0039 NMC0040 NMC0050 NMC0051
 OM00445 OM00450 OM00544 OM00563 OM00628 OM00727 OM00741 OM00874
 OM00897 OM00918 OM00919 OM00962 OM01333 OM01335 OM01380 OM01482
 OM01571 OM01572 OM01683 OM01697 OM01698 OM02657 OM02699 OM04100
 OM04370 OM05200 OM06016 OM08205 OM08579 OM09707 OM09947 OM09950
 OM09951 OM09960 OVR1002 SLH0021 SLH0036 HUYO

PERSONNEL INVOLVED WITH THE MOVEMENT AND PROTECTION OF DIMENSIONAL
 TRAFFIC ARE REQUESTED TO REVIEW DIMENSIONAL HANDLING OPERATING
 INSTRUCTIONS TO ENSURE THEY ARE FAMILIAR WITH THEIR JOB
 RESPONSIBILITIES.

RL9250515 W-05-07 GENERAL AND SPECIFIC RESTRICTIONS APPLY

SECTION 2

CP RAIL DIMENSIONAL SHIPMENT CLEARANCE DATE: 04/01/29

-- PROTECTION NOTICE - AUTHORIZATION --
 -- OVER MAIN TRACKS, SIDINGS, AND INTERCHANGE TRACKS

SHIPMENT CAR(S) : TTRX 361069
 CAR MARSHALLING : SHIPMENT TO BE HANDLED NEAR HEAD END OF TRAIN TO
 FACILITATE OBSERVATION BY TRAIN CREW.
 SHIPMENT : VESSELS
 TO MOVE FROM : CPINTSER VAUGHAN ON
 SUB : MACTIER
 MILE : 15.30
 TO MOVE TO : CPINTSER PT VANCOUVER BC
 SUB : CASCADE
 MILE : 129.10
 ROUTED VIA : CPR
 CP ROUTING WESTTORO, LEASIDE , TOR YD , LEASIDE , WESTTORO,
 MACTIER , ROMFORD , CARTIER , CHAPLEAU, WHITERIV,
 SCHREIBE, TH.BAY, IGNACE , KENORA , WINNIPEG,
 BRANDON , BROADVIE, MOOSEJAW, SWIFTCUR, MEDICHAT,
 CALGARY , FIELD , REVELST , KAMLOOP (also over cn
 detour route kamloops to vancouver) NORTHBE ,
 MISSION , MISSION , MACAULAY, MACAULAY

SECTION 3

SHIPMENT MEASURES:

CENTRE MEASUREMENTS :

--- HEIGHT ABOVE RAIL ---				----- WIDTH -----			
FROM		TO		FROM		TO	
FT	IN	FT	IN	FT	IN	FT	IN
3	4.00	4	4.00	8	0.00		
4	4.00	7	7.00	8	0.00	INCR	12 4.00
7	7.00	9	5.00	12	4.00		
9	5.00	14	9.00	12	4.00	DECR	8 0.00

LOAD LENGTH : 29 FT 0 IN
 GROSS WEIGHT : 147700 POUNDS
 TRUCK CENTRE LENGTH : 69 FT 9 IN
 COMBINED CENTRE OF GRAVITY: 49.98 IN ATR

SECTION 4

SUBDIVISION NAME	FROM MILE	TO MILE	CLASS
MACTIER	15.30	0.00	W05
NORTH TORONTO	5.99	0.00	W05
BELLEVILLE	206.31	197.00	W05
HAVELOCK	181.50	182.40	W05
BELLEVILLE	197.00	206.31	W05
NORTH TORONTO	0.00	5.99	W05
MACTIER	0.00	126.90	W05
PARRY SOUND	0.00	121.74	W05
CARTIER	72.40	111.00	W05
CARTIER	111.00	113.05	W05
NEMEGOS	0.00	136.40	W06
WHITE RIVER	0.00	129.90	W05
HERON BAY	0.00	118.30	W06
NIPIGON	0.00	126.38	W06
NIPIGON	126.38	132.90	W06
KAMINISTIQUIA	0.00	147.23	W05
IGNACE	0.00	146.20	W05
KEEWATIN	0.00	125.70	W05
CARBERRY	0.00	9.20	W05
CARBERRY	9.20	133.10	W05
BROADVIEW	0.00	130.94	W05
INDIAN HEAD	0.00	135.14	W05
SWIFT CURRENT	0.00	110.43	W05
MAPLE CREEK	0.00	147.40	W05
BROOKS	0.00	175.82	W05
LAGGAN	0.00	136.62	W06
MOUNTAIN	0.00	125.70	W06
SHUSWAP	0.00	128.52	W06
THOMPSON	0.00	121.52	W06
CASCADE	0.00	87.00	W06
MISSION	0.00	1.40	W06
CASCADE	87.00	109.58	W06
CASCADE	109.58	112.40	W06
WESTMINSTER	0.00	9.20	W07
CASCADE	112.40	129.10	W06

SECTION 5

SPECIFIC RESTRICTIONS APPLY:

CASCADE MILE : 11.42
 STOP, EXAMINE AND PROCEED 3 MPH SLIDE DETECTOR FENCE

SECTION 6

APPLY FOLLOWING EQUIPMENT MESSAGE INSTRUCTION MESSAGE:

6 TTRX361069 DIMSL W-05-07 SEE PROTECTION NOTICE FOR
 6 GENERAL AND SPECIFIC RESTRICTION. FILE RL9250515

PLEASE PROTECT

SHIPMENT CAN BE HANDLED OVER CN DETOUR ROUTE BETWEEN KAMLOOPS AND
 VANCOUVER WITH ADVANCE NOTICE. COPY OF CN PROTECTION SHOWN BELOW.

FILE : RL9250515

DIRECTOR NMC. RTC - CMC

CP RAIL

CALGARY ALBERTA

RJS

CONTACT: RAILWAY LINE CLEARANCE OFFICER
 CLEARANCE BUREAU
 PHONE 403-319-7471 (OR) 800-363-0177
 S2-MR-#OM0184 FAX 403-319-6840

----- COPY OF CN PROTECTION -----
 PROTECTION NOTICES FOR CAR ID : TTRX361069

FILE: - L42619
 FOR: CP RAIL REGION:
 MONTREAL, QUEBEC JANUARY 29, 2004
 TO ALL CONCERNED

DIMENSIONAL LOAD:

+++ DIMENSIONAL DUE TO WIDTH +++

D4R

TTRX 361069 VESSELS 147,000 LBS GROSS

MEASURING :

8' 0" WIDE FROM 3' 4" TO 4' 4" ATR

12' 4" WIDE FROM 7' 7" TO 9' 5" ATR

8' 0" WIDE AT 14' 9" ATR

FROM : KAMLOOPS BC
 TO : VANCOUVER BC
 ROUTE : CN DETOUR ROUTE
 VIA : VANCOUVER - YALE SUB - BOSTON BAR - ASHCROFT SUB -
 KAMLOOPS

IN ADDITION TO THE OPERATING RULES AND ANY YARD OR OTHER
 SPECIAL INSTRUCTIONS, THE FOLLOWING RESTRICTIONS APPLY:

GENERAL RESTRICTIONS:

DO NOT HUMP, KICK OR DROP SWITCH.

WHEN ADVISED THE VIA LRC BANKING SYSTEM HAS FAILED EN ROUTE, THE
 RTC WILL ISSUE INSTRUCTIONS TO ALL AFFECTED MOVEMENTS THAT SUCH
 VIA EQUIPMENT IS OPERATING AS A D2U LOAD.

MEET/PASS INSTRUCTIONS

(Applicable until the restricted car(s) pass one another)

D-4

On adjacent Main tracks may meet/pass:

D1, D2: No restrictions

D3: When one movement is stopped, the other movement is unrestricted.

When both are moving at meet/pass location, do not exceed 10 MPH.

D4: When one movement is stopped, the other movement not to exceed 10 MPH.

D5: Both movements must stop, then one movement must proceed on hand
or radio signal.

Must not meet/pass D6 to D9

On single track at sidings may meet/pass:

D1 to D6: No restrictions

D7: When one movement is stopped, the other movement is unrestricted.

When both are moving at meet/pass location, do not exceed 10 MPH.

D8: When one movement is stopped, the other movement not to exceed 10 MPH.

Must not meet/pass D9

SPECIFIC RESTRICTIONS:

WHEN "S.P.H.R.S." IS USED IN THESE RESTRICTIONS IT MEANS "STOP AND PROCEED ON
 HAND OR RADIO SIGNAL".

WESTERN CANADA

NONE

FILE NO : L42619

BARRY ANDERSON, CN CLEARANCE BUREAU
 FOR : SENIOR VICE PRESIDENT. TRANSPORTATION
 EDMONTON, ALBERTA TEL: 780-421-6416 FAX: 780-421-6453

- d) **Double stack container** traffic, not exceeding 20 ft 4 ins ATR (Above Top of Rail), equivalent to two (2) 9 ft 6 ins high, by 8 ft 6 ins wide containers stacked (double stack cars identified on train consist as plate "H" or "I", either empty or loaded with containers single tier are considered non-dimensional).

Note: This item covers containers loaded double stacked in:
 CONVENTIONAL CARS EQUIPPED FOR DOUBLE STACK OPERATION
 AND MULTI-PLATFORM CARS.

This traffic can be handled on CP between the locations shown below, via the routes indicated.

Between	Via
Vancouver and Alyth	Revelstoke, Field
MacAulay and Mile 6.9 Westminster Subdivision	
Mission and Huntingdon (Mission Subdivision)	
Roberts Bank and Riverside	- BCR Port Subdivision, joint track Roberts Bank to Pratt - CPR Page Subdivision, Pratt to Livingstone - CN Rawlison Subdivision, joint track Livingstone to Hydro - CN Yale Subdivision, joint track Hydro to Page - CPR Page Subdivision, Page to Riverside
Alyth and South Edmonton	Red Deer, Leduc Subdivisions
Golden and Dunmore	Fort Steele, Crowsnest & Lethbridge
Alyth and Coutts	Aldersyde Subdivision
Wetaskiwin and Portage La Prairie	Saskatoon
Alyth and Winnipeg	Regina, Medicine Hat
Pasqua and North Portal	Weyburn Subdivision
Regina and Lanigan	Lanigan Subdivision
Winnipeg and Emerson	Emerson Subdivision
Winnipeg and Toronto (Obico-Vaughan)	Sudbury, MacTier
Smiths Falls and Brockville	Brockville Subdivision
Romford and Montreal (Montreal Wharf-Lachine)	OVR (Cartier, North Bay, Chalk River) & Winchester Subdivisions
Montreal (Montreal Wharf-Lachine) and Toronto (Obico-Vaughan)	Belleville and Winchester Subdivisions
Montreal (Montreal Wharf-Lachine) and St. Jean	Adirondack Subdivision
Toronto (Obico-Vaughan) and Niagara Falls	CN Oakville Sub, joint section between Canpa and Desjardins (CN Hamilton Jct) or via Hamilton Sub
Toronto (Obico-Vaughan) and College Ave.	Galt and Windsor Subdivisions Double stack container traffic between College Ave. and Detroit prohibited, unless authorized by Protection Notice. Note: North tube of the Windsor/Detroit tunnel suitable to accommodate two 8'6" high by 8'6" wide containers stacked.

A train handling articulated multi-platform cars loaded with one or more containers and equipped with 125 ton trucks will be so identified on train consist and the following speed restrictions apply **IF** containers are double stacked:

Note: The speed restriction applies to the cars, not the entire train.

Subdivision	Maximum speed	Location	Mile
Brooks	30 MPH	Over bridge	0.1
Laggan	20 MPH	Over bridge	0.1
North Toronto	30 MPH	Over railway crossing at grade	5.3
Outremont Spur	10 MPH	Over bridge	2.4
Wetaskiwin	25 MPH	Over railway crossing at grade	69.4
Wilkie	25 MPH	Over railway crossing at grade	2.3
Winchester	40 MPH	Over railway crossing at grade	35.4
Windsor	25 MPH	Over railway crossing at grade	11.8
Windsor	25 MPH	Over railway crossing at grade	63.7
Windsor	40 MPH	Over railway crossing at grade	68.6

e) **Overloaded cars:** Unless otherwise indicated on train consist, overloaded cars may be accepted without additional authority. Overloaded cars which are NOT acceptable for movement without additional protection, will be identified as such on train consists and must be authorized by dimensional protection notice.

f) **CN tracks:**

Subject to instructions contained in CN dimensional blanket file(s);

- Fully enclosed multilevel traffic as described in item c) and
- Double stack container traffic as described in item d) can be handled over CN detour routes between;
 - Kamloops BC and Vancouver BC.
 - Reynolds ON and Winnipeg MB (via CN's northern route).

Important: When detouring over CN, train crews must ensure they are in possession of CN dimensional blanket file(s).

Crews detouring between Reynolds and Winnipeg must also be in possession of the Special meet and pass instruction identified in CN's time table covering the Bala Subdivision at Burton.

2.3 A copy of the Protection Notice must;

- accompany the movement from origin station to destination station,
- be attached to the shipments waybill (if a waybill is provided).

Crew members must comply with all applicable specific restrictions listed in their Protection Notice.

2.4 The following information will be provided immediately after the addresses on each Protection Notice.

Examples:

DL4011109 W-08 GENERAL RESTRICTIONS APPLY

or

RL4013099 W-05-07 GENERAL AND SPECIFIC RESTRICTIONS APPLY

a) File Number

- A file number commencing with “DL” indicates that General Restrictions apply. (e.g. DL4011109)
- A file number commencing with “RL” indicates General and Specific Restrictions apply. (e.g. RL4013099)

b) Classification

- W-08 indicates the classification of the shipment.
- W-05-07 indicates the smallest and largest classification when the classification varies throughout the shipments entire route.

c) Restrictions

- “General Restrictions Apply,” indicates that subsection 4.0 of the GOI applies.
- “General and Specific Restrictions Apply,” indicates that SPECIFIC RESTRICTIONS of the protection notice also apply.

2.5 The crew of a train or engine handling dimensional traffic is responsible to ensure a dimensional shipment is not diverted from the limits stated in section 4 of the Protection Notice. If necessary to move the shipment in an area outside of these limits, a revised protection notice must be obtained.

In terminals where crews are not in possession of Protection Notices, the yardmaster is responsible to protect these limits.

3.0 Classification

3.1 Dimensional traffic is classified according to width, based on shipment being loaded on a car less than 42 feet. This information will be included on the train consist in a “Code 6 Instruction Message”

Classification	Effective Width
W-00	10' 8' or less
W-01	10' 9" to 11' 0"
W-02	11' 1" to 11' 6"
W-03	11' 7" to 12' 0"
W-04	12' 1" to 12' 6"
W-05	12' 7" to 13' 0"
W-06	13' 1" to 13' 6"
W-07	13' 7" to 14' 0"
W-08	14' 1" to 14' 6"
W-09	14' 7" to 15' 0"
W-10	15' 1" and over

For overhanging shipments or shipments loaded on cars of 42 feet or longer, the “Effective Width” is reflected by a more restrictive classification.

Note: Classification W-00 refers to dimensional traffic that has an effective width of 10'8" or less. (e.g. shipment exceeds CP maximum weight or height standards but not maximum width standards).

4.0 General Restrictions

The following definitions apply in this subsection:

Restricted Meet: When the train handling the wide traffic is required to move past trains, equipment, or other permissible wide traffic, movements must be stopped and inspection made to ensure that adequate clearance exists before proceeding.

Note: A Restricted Meet is not required at locations where tracks diverge onto separate roadbeds.

Unrestricted Meet: Movements may meet or pass without restrictions.

The meet and pass instructions listed herein are calculated on standard track centres between adjacent tracks on the same roadbed. Standard track centres are 13 feet between main tracks and 14 feet between a main track and a track other than a main track.

Some locations on CP have track centres that exceed these standards. At such locations where track centres between adjacent tracks on the same roadbed are known to exceed these standards, meet and pass instructions may be relaxed provided that a Restricted Meet takes place.

4.1 Specific Meet/Pass Instructions

Classification Instructions

- W-09 & W-10:**
- Owing to extreme width, shipment to be moved in DAYLIGHT ONLY, unless otherwise authorized by the Service Area Manager - Field Operations.
 - Trains handling W-09 or W-10 traffic must approach all track units prepared to stop unless it is determined that adequate clearance exists.

W-08 to W-10: Adjacent Main Tracks (Multitrack Territory)

- All adjacent main tracks to be kept clear of trains and equipment during movement.

Also: See item 4.2 for further restrictions applicable on SPECIFIC CURVES.

4.2 Specific Curves

The following additional restrictions apply on these specific curves:

Mile	Sub	Mile	Sub	Mile	Sub
2.03	Outremont Spur	73.5	Cartier Sub	79.5	Cartier Sub
3.59	Outremont Spur	74.8	Cartier Sub	80.4	Cartier Sub
9.70	Parc Sub	75.0	Cartier Sub	124.6	Keewatin Sub
42.42	Adirondack Sub	76.2	Cartier Sub	0.0	Emerson Sub
0.60	Westmount Sub	76.7	Cartier Sub	122.7	Cascade Sub
1.40	Westmount Sub	76.8	Cartier Sub	123.7	Cascade Sub
1.90	Westmount Sub	76.9	Cartier Sub	125.9	Cascade Sub
1.93	Westmount Sub	77.4	Cartier Sub	126.4	Cascade Sub
		78.2	Cartier Sub	128.2	Cascade Sub

W-05 and Greater:

- All adjacent main tracks to be kept clear of trains and equipment during its movement.

W-04:

- All adjacent main tracks to be kept clear of traffic W-01 and greater.
- Unrestricted meet with traffic W-00 and non-dimensional traffic on Adjacent Main Track.

W-03:

- All adjacent main tracks to be kept clear of traffic W-02 and greater.
- Unrestricted meet with traffic W-01, W-00 and non-dimensional traffic on Adjacent Main Track.




4.3 Meet/Pass Instruction Charts

The Meet/Pass Instruction Charts shown below may be used to determine meet and pass restrictions.

How to use charts: In the vertical column on the left, find the classification of the dimensional shipment being handled. Follow this row until it intersects with the appropriate column showing the classification of the shipment being met or passed. Determine the colour of the intersecting square and refer to explanation below.




W	00	01	02	03	04	05	06	07	08	09	10
01	Green	Green	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red
02	Green	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Red
03	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Red	Red
04	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red
05	Green	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Red
06	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red
07	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
08	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
09	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
10	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red

CHART #1: Adjacent Main Tracks

-  Unrestricted meet or pass.
 -  Restricted meet or pass.
 -  Must not meet or pass on an adjacent main track except where track centres are known to be greater than 13 feet. At such locations a restricted meet must take place.
- Important:** This chart does not apply on specific curves listed in item 4.2



W	00	01	02	03	04	05	06	07	08	09	10
01	Green	Green	Green	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red
02	Green	Green	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Red
03	Green	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Red	Red
04	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red
05	Green	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Red
06	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red
07	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
08	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
09	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
10	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red

CHART #2: Adjacent Track (Non Main Track)
(including signalled track)

-  Unrestricted meet or pass.
 -  Restricted meet or pass.
 -  Must not meet or pass on an adjacent track except where track centres are known to be greater than 14 feet. At such locations a restricted meet must take place.
- Important:** See item 4.4 for dimensional bulge instructions.

W	00	01	02	03	04	05	06	07	08	09	10
01	Green	Green	Green	Green	Red	Red	Red	Red	Red	Red	Red
02	Green	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
03	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red
04	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
05	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
06	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
07	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
08	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
09	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
10	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red

CHART #3: Specific Curves (see item 4.2)

-  Unrestricted meet or pass.
-  Must not meet or pass on an adjacent main track.

↑ These 00 columns include W-00 and non-dimensional .

4.4 DIMENSIONAL BULGE Meet/Pass Instructions

Dimensional bulge locations are where track centers are 15'7" or 20' and will be indicated in Time Table footnotes and identified by dimensional bulge track signs adjacent to the track.

The following only applies when a meet or pass takes place at a dimensional bulge location identified by time table footnote as a dimensional bulge where GOI Section 10, item 4.4 applies provided the dimensional shipment(s) is located between the designated (dimensional bulge) track signs.

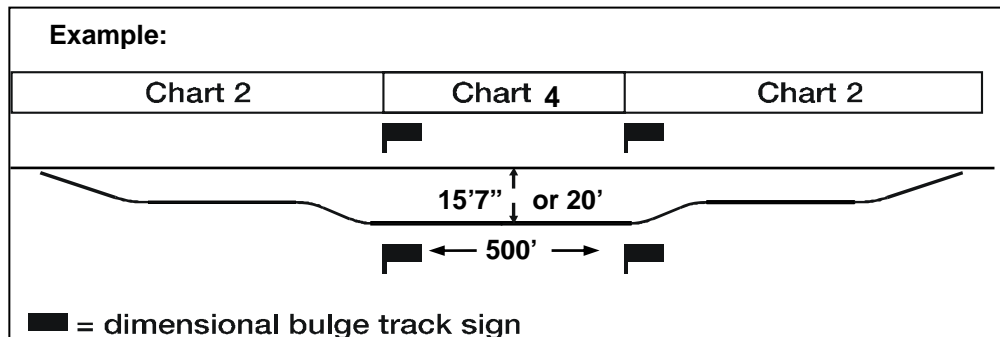
Classification Instructions for 15'7" bulge

- W-10** • Will be protected by specific restrictions contained in the protection notice.
- W-09 & W-08** • Restricted meet with traffic W-09, W-08 and W-07.
• Unrestricted meet with traffic W-06 or less.
- W-07** • Restricted meet with traffic W-09 and W-08.
• Unrestricted meet with traffic W-07 or less.

Classification Instructions for 20' bulge

- W-10** • Will be protected by specific restrictions contained in the protection notice.
- W-09** • Unrestricted meet with traffic W-09 or less.

Important: Chart # 2 must be used to protect equipment located outside limits of the bulge.



W	00	01	02	03	04	05	06	07	08	09	10
01	■	■	■	■	■	■	■	■	■	■	■
02	■	■	■	■	■	■	■	■	■	■	■
03	■	■	■	■	■	■	■	■	■	■	■
04	■	■	■	■	■	■	■	■	■	■	■
05	■	■	■	■	■	■	■	■	■	■	■
06	■	■	■	■	■	■	■	■	■	■	■
07	■	■	■	■	■	■	■	■	+	+	■
08	■	■	■	■	■	■	■	+	+	+	■
09	■	■	■	■	■	■	■	+	+	+	■
10	■ See protection notice										

CHART #4: Dimensional Bulge

- Unrestricted meet or pass.
- Restricted meet or pass.
+ = Unrestricted when using 20' bulge.
- See protection notice

5.0 Handling Procedures

5.1 Before any dimensional traffic may be placed in a train, permission of the responsible NMC Manager (Operations Manager Calgary) must be secured. A crew member must confirm any dimensional traffic lifted en route with the RTC.

Note: Permission will be withheld until appropriate MTP dimensional information has been updated.

When requesting permission from the NMC Manager, the employee doing so must supply the following information:

- car initials and number,
- Classification (such as W-03, or W-03-07),
- Specific Restrictions, if any,
- Protection Notice file number,
- any other information that may be required.

5.2 Before setting out dimensional traffic (W-01 or greater), the crew must obtain authority from the RTC or yardmaster.

When dimensional traffic is set out, the crew must confirm the location of such traffic with the RTC or yardmaster before leaving that location.

If communication with the RTC or yardmaster is not possible, dimensional traffic must not be set out on a track adjacent to a main track or adjacent to a siding. Communication must be made with the RTC at the first opportunity.

5.3 Yardmasters or other employees in charge are responsible to keep crews informed of the location of conflicting dimensional traffic within yards and cautionary limits.

5.4 Dimensional Load Zone (D L Zone) -

Within limits specified in Special Instructions, the designated employee is responsible for protecting the movement of dimensional traffic against main track movements.

Before entering such limits, the crew of a train or engine handling dimensional traffic must advise the responsible employee;

- of the widest classification (W-01 or greater) being handled,
- if any dimensional traffic being handled has specific restrictions that apply within the limits specified in Special Instructions.

Trains or engines entering or moving within these limits will be governed by instructions from the responsible employee.

5.5 When necessary to protect the movement of dimensional traffic through a controlled interlocking, the signalman will be governed by instructions from the RTC or the yardmaster.

5.6 Crews must be especially watchful when operating through yards, sidings, interchange tracks and cautionary limits to ensure ample side clearance exists between dimensional traffic being handled and equipment on adjacent tracks.

Crews must also ensure ample side clearance exists between equipment being handled and dimensional traffic on adjacent tracks.

Where overhead or side clearance is doubtful, movement must be stopped and inspection made to ensure that adequate clearance exists before proceeding.

5.7 On trains operating without a manned caboose, all dimensional traffic that would normally be marshalled to permit visual observation by the crew shall be marshalled as close as possible to, but not more than 2000 feet from, the controlling unit.

Note: Train consist or protection notice will indicate dimensional shipments to which this item applies.

Note: See GOI Section 7, Item 16.2 (C) for lading which is prone to shifting.

5.8 Cautionary limits: Crews must advise the RTC when handling wide traffic (W-01 or greater) on the main track or adjacent to the main track.

Employee	Important Responsibilities when Handling Dimensional Traffic	GOI	
<p>D L Zone designated employee</p> <p>Yardmaster</p>	<ul style="list-style-type: none"> • Provide protection for dimensional traffic against main track movements within D L Zone. • Provide instruction for RTC or Interlocking RTC to protect dimensional traffic through controlled interlockings and CTC within D L Zone. • Protect dimensional track units against other main track movements. • Ensure dimensional traffic is not diverted from limits stated in protection notice (Item 2.1, "Section 4") in terminals where crews are not in possession of Protection Notice. • Obtain permission from responsible NMC Manager prior to placing dimensional traffic on a specific train. • Keep crews in yards and cautionary limits informed of the location of conflicting dimensional traffic. • Ensure traffic requiring visual observation is properly marshalled on train. 	<p>5.4</p> <p>5.5</p> <p>7.4</p> <p>2.5</p> <p>5.1</p> <p>5.3</p> <p>5.7</p>	
	<p>NMC Managers</p>	<ul style="list-style-type: none"> • Provide permission to place dimensional traffic on a specific train. • Update appropriate MTP screen before giving permission. • Inform the RTC of the dimensional traffic and which train it will be on. • Ensure MTP is updated when dimensional traffic is set out on line. 	<p>5.1</p> <p>5.1</p>
	<p>Train Crews</p>	<ul style="list-style-type: none"> • Ensure Protection Notice accompanies dimensional traffic and comply with Specific Restrictions. • Ensure dimensional traffic is not diverted from limits stated in section 4 of the protection notice. • Ensure movement is stopped and inspected at locations where a meet is restricted. • Confirm with RTC when dimensional traffic is lifted en route. • Confirm location with RTC or Yardmaster when dimensional traffic (W-01 or greater) is set out on line. • Ensure designated employee is advised of dimensional traffic on train prior to entering locations specified as D L Zone. • Ensure ample side clearance exists when operating through yards, sidings, interchange tracks and cautionary limits. • Ensure dimensional traffic is properly marshalled. • Ensure shipments W-03 or greater in multitrack, and W-04 or greater in single track as per CROR Rule 101(d) before entering or moving on a main track, outside of D L Zone. 	<p>2.3</p> <p>2.5</p> <p>4.0</p> <p>5.1</p> <p>5.2</p> <p>5.4</p> <p>5.6</p> <p>5.7</p> <p>6.2</p>
	<p>RTC</p>	<ul style="list-style-type: none"> • Ensure copy of protection notice is available before dimensional traffic operates on sub. • Ensure necessary GBO is issued to train handling traffic. • Ensure protection is provided for conflicting dimensional traffic or dimensional TU traffic. • Ensure adjoining RTC, including RTCs of other railways and/or Yardmaster are advised of approaching dimensional traffic. • When dimensional traffic (W-01 or greater) is set out on line, ensure it is properly documented and necessary GBO issued. 	<p>6.1, 6.2</p> <p>7.3</p> <p>6.4</p>
	<p>Foreman</p>	<ul style="list-style-type: none"> • Advise RTC prior to placing any equipment (rolling stock) on a main track in multitrack. • Advise RTC prior to placing dimensional equipment or dimensional TU on the main track or a track adjacent to main track. • Be familiar with the contents of dimensional instructions posted in the operating cab. • Obtain authority from Yardmaster or RTC before storing a dimensional track unit in yards or adjacent to a main track or adjacent to a siding. 	<p>7.1</p> <p>7.3</p> <p>7.3</p> <p>7.5</p>

6.0 GBO

- 6.1** Dimensional traffic requiring special handling will be covered under Section 5 of the Protection Notice, "Specific Restrictions." Crews governed by Specific Restrictions must communicate to the RTC the car number and file number of each dimensional shipment that requires special handling.

Note: When protected by BLANKET CLEARANCE the requirement to include each car number does not apply.

- 6.2** Crew members must comply with the requirements of CROR Rule 101(d) when handling dimensional traffic:
- W-04 or greater in single track territory.
 - W-03 or greater in multitrack territory.

- 6.3** Requirements of CROR Rule 101(d) do not apply to train or engines handling dimensional traffic within DL Zone Limits.

Note: Requirement of item 5.4 still applies (notify designated employee).

- 6.4** When the RTC grants authority for dimensional traffic (W-01 or greater) to be set out on a track adjacent to a main track or adjacent to a siding, the RTC must advise all trains which may encounter such traffic by GBO. If a shipment is of a fragile nature and other trains could come into contact with it through setting out or lifting, this information must be included in the GBO.

Example:

**CP 301215 classification W-05
on siding Cantic
Contact RTC before moving
(or Must not be coupled to or moved)**

General Operating Instructions (GOI)

Section 11

Security

TABLE OF CONTENTS

1.0	General Security	150
2.0	Security Alert Levels	150
3.0	Suspicious Objects	150
4.0	Persons on CP Property	151
5.0	Persons Riding Trains	151
6.0	Employee Identification	151
7.0	Disclosure of Sensitive Information	152
8.0	Border Crossing	152

1.0 General Security

1.1 Train crews must immediately report to the RTC or CP Police any security concern, security incident, criminal activity (known or suspected), suspicious activities, suspicious persons on or near Company property, and any other near miss or possible security threats. They should also be alert for signs of theft or vandalism of critical safety devices.

Note: More information on CP's Security Plan and Programs can be found on **RailCity**.

CP Police Communication Centre

1 – 800 – 716 – 9132

2.0 Security Alert Levels

2.1 CP's security program has 4 Alert Levels which incorporates all actions from the preceding levels:

- Level 1 – Normal Day-to-Day Operations
- Level 2 – Heightened Security Awareness
- Level 3 – Credible Threat
- Level 4 – Confirmed Threat

If there is a reason to change CP's Alert Level, RTC's will receive specific information on actions to be taken. Train crews will receive instructions by bulletin and/or from the RTC.

2.2 At Alert Level 3, Alert Trains will be identified, and the RTC notified of their status. The **RTC** must confirm the location of all Alert Trains in dark territory on a regular basis, at least every 60 minutes, and record this information.

ALERT TRAINS are trains carrying certain Dangerous Goods. The message "This is an Alert Train" will appear on the train consist in the header message area. Alternatively, you may be notified by the RTC while en-route that your train is an Alert Train.

2.3 At Alert Level 3, train crews must notify the RTC immediately of unusual or unexpected stops (e.g.: red signals, defect detectors, undesired brake emergencies, etc.), BEFORE they exit the locomotive for any reason, including to inspect the train. While occupied, locomotive cab doors should be kept locked.

3.0 Suspicious Objects

3.1 Employees should be alert for any suspicious or dangerous objects on trains or CP property, including items which may be attached to or adjacent to tracks, switches, signals, or on the right-of-way.

These objects can come in many different forms and may appear ordinary. Examples of what to look for are:

- Unusual items, such as Improvised Explosive Devices (IED), on or attached to cars, especially placarded tank cars.
- Apparent signs of tampering, sabotage, contraband or other unusual or prohibited items
- Loaded cars with broken door seals and/or partially open doors
- Hidden or abandoned bags, boxes or parcels,
- Objects emitting an unusual sound, odour, mist, gas or vapour.

3.2 Remote Monitoring Equipment (RME), such as GPS (Global Positioning System) devices are commonly being installed on highway trailers, railroad freight & tank cars and are not dangerous objects. Per AAR Standard S-2045, they are:

- Identified by a sticker, label or stencil:
 - At least 2" X 3"
 - In a highly visible bright yellow or orange with black lettering
 - Located within 12 inches of the sensor
 - With information describing the device indicating it's function and providing a phone number for information related to the device.
- Located in various locations on rail cars.
- Identified in UMLER if the RME is permanently mounted

3.3 If a suspicious object is found:

1	Do not attempt to move or touch it.
2	Stay clear of the area and keep others clear of the area.
3	If the object is a possible explosive: <ul style="list-style-type: none"> do not use your radio or cellular phone unless you are at least 300 feet away from the object, and instruct all personnel to evacuate the area.
4	Take note of any suspicious vehicles or people in the area
5	Immediately notify the RTC, your supervisor, or CP Police.

3.4 Definitions:

Improvised Explosive Device (IED) – is a device fabricated in an improvised manner incorporating explosives or destructive, lethal, noxious, pyrotechnic, or incendiary chemicals in its design. This device generally includes a power supply, a switch or time, and a detonator or initiator.

Remote Monitoring Equipment (RME) applies to any device applied to a railcar or its lading that transmits a signal or records data that can be received by a remote receiver or retrieved at a later time by a carrier, shipper or other entity.

4.0 Persons on CP Property

Note: Employees should not approach or confront unknown persons on or near CP property or railway tracks if they appear threatening, upset, depressed, or intoxicated. Reasonable efforts should be made to keep them under observation from a safe distance until CP or local police can respond. Do not place yourself at risk. If you feel threatened back off and call the police.

3.1 Remain alert for:

- Individuals illegally riding in locomotives and on trains
- Strangers or visitors on CP property.

3.2 If it is safe, approach strangers or visitors on the property and determine if they have a business need to be there. Check credentials and photo ID for individuals, including those identifying

themselves as working for any government agency such as Transport Canada, or the Transportation Safety Board.

3.2 Immediately, report any suspicious or unauthorized people to the RTC, your Supervisor or CP Police who can arrange to have them escorted off the property. Be prepared to provide details such as descriptions of the individual and/ or vehicles.

5.0 Persons Riding Trains

5.1 The conductor or other employee in charge must immediately report to the RTC whenever there are other persons riding in locomotives or other non-passenger rail equipment, excluding assigned crew members and managers / supervisors performing their duties.

Managers must notify the Corridor Manager NMC, when they will be riding.

5.2 This report should identify the individual(s) name and what authorization they have for accompanying the train or equipment, including:

- a company employee who is performing normal duties and has company ID
- a company employee who possesses a signed access pass and has company ID
- a non-employee who possesses a signed pass, photo ID and has completed a liability waiver form.

5.3 If there are unauthorized persons riding on the train, the train crew should:

- not proceed, or stop at the next available location, AND
- notify the RTC or CP Police.

6.0 Employee Identification

Employee identification cards are issued to all CP employees.

Employee identification cards include the employee's name, employee number and a phone number that can be used to confirm employment or obtain emergency contact information. The cards must be signed and carried along with valid photo ID by all employees on duty, and both pieces of identification must be presented for on-demand checks by a Company officer or by a customer while at a customer site. The employee identification cards do not replace location-

specific access cards which must continue to be used as well.

Employee identification cards are non-transferable, and are the responsibility of each employee. If an employee's card is incorrect, irreparably damaged, lost or stolen, the employee must contact the Human Resources Service Centre at 1-866-319-3900 (CAN) or 1-800-234-0013 (US) to arrange replacement. These contact numbers, or HR Self Service on RailCity, must also be used to ensure emergency contact information is up-to-date.

7.0 Disclosure of Sensitive Information

- 7.1 Be aware of personal conversations with others off the property concerning your job and workplace. Unusual interest in technical details should be reported to your supervisor and CP Police.
- 7.2 The heightened need for increased public security and for terrorist threat countermeasure planning by emergency responders has resulted in an increase in requests for information about our railway operations. Much of the attention is focused on the transportation of dangerous goods.

Anyone receiving a request for dangerous goods information or other suspicious questions regarding rail operations or critical infrastructures should ascertain as much detail as possible about the individual making the request, the organization he or she represents, and the intended use of any material that we might supply. Forward all such requests to the Public Affairs Department for co-ordination of the appropriate response.

NOTE: All CP employees are prohibited from providing any outside third party with information regarding dangerous goods movements, routing, volumes or storage.

8.0 Border Crossing

- 8.1 All employees crossing the border must comply with all requirements and requests from both the U.S. Customs and Border Patrol and Customs and Immigration Canada officials.

Unless otherwise instructed, you must check in with border officials each time you cross, regardless of why or the duration. It is illegal to cross the border with firearms, explosives, drugs, other banned substances or goods that may be subject to any form of import duty.

General Operating Instructions (GOI)

Section 12

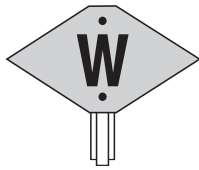
Track Signs

TABLE OF CONTENTS

Whistle Post.....	154
Prohibited Whistle Post	154
Mile Post.....	154
Structure Number Sign.....	154
Switch Mile Sign	154
Station Mile Sign.....	154
Station Name Sign.....	154
Station Name Sign (Alternative).....	154
Begin Heavy Grade Sign and End Heavy Grade Sign	154
Begin Mountain Grade Sign and End Mountain Grade Sign.....	154
Advance Speed Sign.....	155
Permissible Speed Sign	155
Special Speed Sign	155
Stop Sign.....	155
End of Track Sign	155
Railway Crossing at Grade and Drawbridge Sign	155
Beginning of (named) Railway Sign	155
Block and Circuit End, Begin and End CTC Signs	156
Restricted Clearance Sign.....	156
Snow Plow and Flanger Sign	156
Begin Measured Mile Sign and End Measured Mile Sign	156
Advance Interlocking Sign.....	156
Advance Yard Limit Sign	156
Yard Limit Sign	156
Advance Cautionary Limit Sign	156
Cautionary Limit Sign	157
Switching Zone Sign.....	157
Dimensional Zone Sign	157
Designated Switch Sign.....	157
Main Track Begins Sign.....	157
Main Track Ends Sign.....	157
Engines Prohibited Beyond This Point Sign.....	157
Spotting of Equipment Prohibited Beyond This Point Sign.....	157
Derail/Derail Number Sign.....	157
Derail Switch Sign	158
Overhead Wire Sign	158
Advance TOP Limit Sign.....	158
TOP Limit Sign	158
Lubricator Location Sign.....	158
Test Site Location Sign.....	158
Dimensional Bulge Sign	158

Signs illustrated in this section are in accordance with current standards. Signs of older types still in service convey the same meanings.

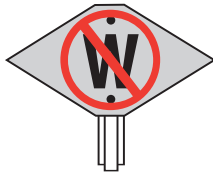
WHISTLE POST



Black letter W on reflective silver background

Located at least one-quarter (1/4) mile from the edge of all public crossings at grade, blind curves and tunnels.

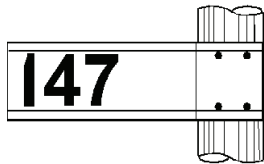
PROHIBITED WHISTLE POST



Black letter W encircled in red with red diagonal bar, on reflective silver background

Located at least one-quarter (1/4) mile from the edge of every public crossing at grade, where engine whistle signal Rule 14 (I) is prohibited by special instruction.

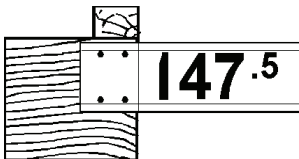
MILE POST



Black numerals on white background

Located at one mile intervals to designate subdivision mileage.

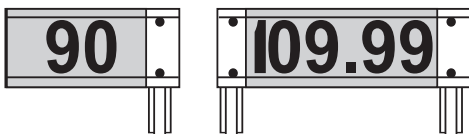
STRUCTURE NUMBER SIGN



Black numerals on white background

To designate to nearest tenth of a mile the location of certain structures such as bridges, tunnels and snowsheds.

SWITCH MILE SIGN



Black numerals on reflective silver background

Located opposite actual point of switch, to identify certain switches which are designated by mileage in Track Occupancy Permits or Clearances.

STATION MILE SIGN



Black letters on white background

Located one mile from station, siding switch, first main track switch where trains can enter or leave yard tracks, designated switch, or junction switch, whichever is the most outlying in each direction.

STATION NAME SIGN



Black letters on white background

Located at mileage shown in time table, parallel to main track.

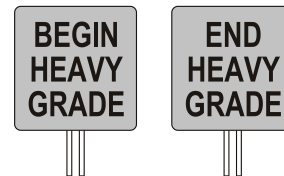
STATION NAME SIGN (ALTERNATIVE)



White letters on reflective blue background.

Located at mileage shown in the time table, perpendicular to track.

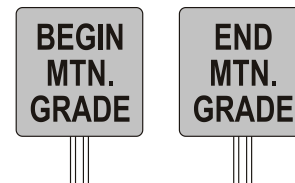
**BEGIN HEAVY GRADE SIGN and
END HEAVY GRADE SIGN**



Black letters on reflective silver background

Placed at locations indicated in special instructions or in time table footnotes to mark the beginning and end of a downgrade which exceeds 0.8%, but does not exceed 1.8%, for a distance of 2 miles or more.

**BEGIN MOUNTAIN GRADE SIGN and
END MOUNTAIN GRADE SIGN**



Black letters on reflective silver background

Placed at locations indicated in time table footnotes or special instructions to mark the beginning and end of a downgrade which exceeds 1.8%.

ADVANCE SPEED SIGN



Black vertical arrow above black letters, on reflective yellow background

Located one mile in advance of a permissible speed sign marking the beginning of a zone of lower speed.

PERMISSIBLE SPEED SIGN

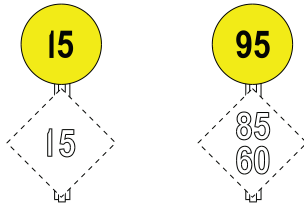


Black numerals on reflective yellow background

To mark the beginning of a speed zone specified in special instructions. When two speeds are shown on the sign, the upper speed applies to passenger trains and the lower speed to other trains and engines.

When one speed is shown on the sign it applies to all trains and engines.

SPECIAL SPEED SIGN



Black numerals on reflective yellow background

To mark the beginning of a speed zone for special types of passenger train equipment when specified in special instructions. Mounted on a sign post, above a permissible speed sign.

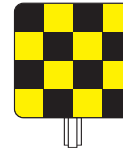
STOP SIGN



Black letters on reflective red background

Located 500 feet, except where otherwise indicated, from non-interlocked railway crossings at grade, non-interlocked drawbridges, and at other locations where its use is required.

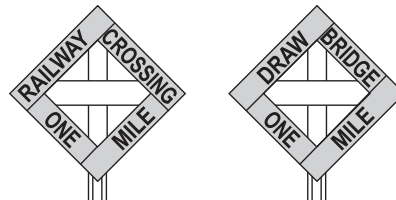
END OF TRACK SIGN



Black check on reflective yellow background

Located at the actual termination point of track, to indicate end of track.

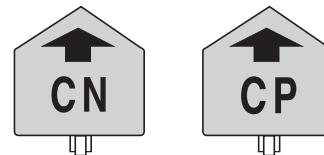
RAILWAY CROSSING AT GRADE and DRAWBRIDGE SIGN



Black letters on reflective silver background

Located one mile from non-interlocked railway crossings at grade and non-interlocked drawbridges.

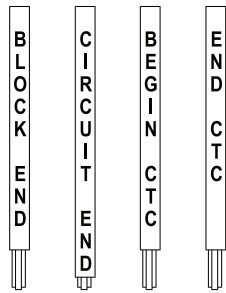
BEGINNING OF (named) RAILWAY SIGN



Black vertical arrow above black initials of railway, on reflective silver background

Located at actual point where the (named) railway authority begins.

**BLOCK and CIRCUIT END,
 BEGIN and END CTC SIGNS**



Black letters on white background

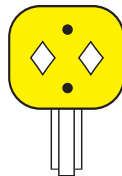
BLOCK END - Indicates end of track circuit controlling a block or interlocking signal.

CIRCUIT END - Indicates end of track circuit controlling automatic warning devices at locations specified in special instructions, or other designated devices.

BEGIN CTC - Indicates beginning of centralized traffic control system territory.

END CTC - Indicates end of centralized traffic control system territory.

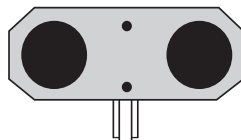
RESTRICTED CLEARANCE SIGN



Two diamond shaped holes in yellow background

To call attention to restricted side or overhead clearance, or both, where employees must not ride sides or above the roof of a moving engine or car.

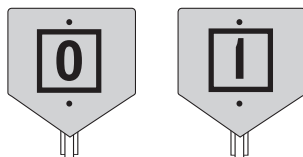
SNOW PLOW AND FLANGER SIGN



Black circles on reflective silver background

To call attention of snow plow and flanger operators to an obstruction to the operation of their snow removal equipment.

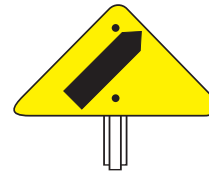
**BEGIN MEASURED MILE SIGN and
 END MEASURED MILE SIGN**



A black numeral within a black hollow square on reflective silver background

Placed exactly one mile apart, and located where required, to permit crews to verify accuracy of the Locomotive Speed Indicator and/or the Distance Measuring Device.

ADVANCE INTERLOCKING SIGN



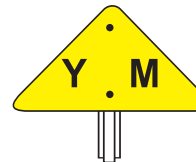
Triangular shaped sign with a black diagonal arrow on reflective yellow background

Located one mile from interlocking not provided with an advance block signal.

Indication: Proceed, preparing to stop at the interlocking signal.

Note: This requirement does not apply when track is seen to be clear to the interlocking signal and such signal indicates proceed.

ADVANCE YARD LIMIT SIGN



Black letters on reflective yellow background

Outside ABS, placed at least one mile in advance of each yard limit sign.

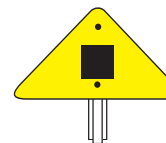
YARD LIMIT SIGN



Black letters on reflective yellow background

To define yard limits.

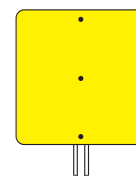
ADVANCE CAUTIONARY LIMIT SIGN



Black square on reflective yellow triangle

Placed at least one mile in advance of each cautionary limit sign.

CAUTIONARY LIMIT SIGN



Reflective Yellow Square

To define cautionary limits. Sign visible from both directions.

SWITCHING ZONE SIGN



Black letter Z on reflective silver background

To define switching zone limits specified in the time table or special instructions. Such signs are placed to face trains or engines leaving the limits.

DIMENSIONAL ZONE SIGN



Black letters on reflective silver background

To define dimensional zone limits specified in the time table and described in GOI Section 10, Item 5.4.

DESIGNATED SWITCH SIGN



Black circle on top of a black inverted triangle within a silver reflective background

Located at right angle to track, adjacent to a designated switch indicated in the time table by location.

MAIN TRACK BEGINS SIGN



Black letters T over M symbol on reflective silver square

Located at the actual point where main track begins.

MAIN TRACK ENDS SIGN



Black letters T over M symbol with black diagonal bar on reflective yellow square

Located at the actual point where main track ends.

Note: These signs need not be placed where the main track begins or ends at a switch.

ENGINES PROHIBITED BEYOND THIS POINT SIGN



Black engine symbol encircled in red with red diagonal bar on reflective yellow square

Located at actual point beyond which an engine is prohibited from moving.

SPOTTING OF EQUIPMENT PROHIBITED BEYOND THIS POINT SIGN



Black car symbol encircled in red with diagonal red bar and black arrow on white square

Located at sufficient distance from a road crossing, and to the outside of the outer track(s) to which it applies, in order to provide adequate sight distance of adjacent main track for vehicles using the road crossing.

Indication: Cars, engines or track units may not be left between the sign and the road crossing in the direction of the arrow.

DERAIL/DERAIL NUMBER SIGN

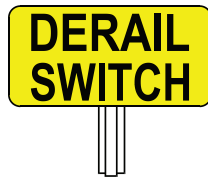


Black letters/numeral on reflective yellow background

DERAIL - Indicates location of derail.

DERAIL NUMBER - When added to DERAIL sign, indicates another derail, or other derails, on adjacent track(s) where derail signs cannot be installed because of clearance restrictions. Number refers to the total number of tracks having derails at the location marked by the derail sign.

DERAIL SWITCH SIGN



Black letters on reflective yellow background
 Indicates location of a switch point derail.

OVERHEAD WIRE SIGN



Black letters, numeral, arrow and symbol on reflective yellow background
 To call attention to crane operators that overhead wires are crossing the track.
 Number indicates number of overhead wires.
 Placed 200 feet in advance of the first overhead wire crossing the track on each approach.

ADVANCE TOP LIMIT SIGN



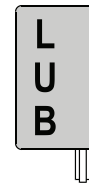
Black letters and arrow on reflective yellow background
 Located to the right of the track at least 3000 yards in advance of each TOP limit sign.

TOP LIMIT SIGN



Red letters on reflective silver background
 To mark the entrance to TOP limits, where permanent TOP limits are in effect.

LUBRICATOR LOCATION SIGN



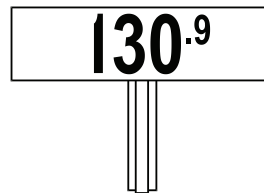
Black letters on silver background
 To indicate to snow plow operators the location of a rail lubricator mounted on track.

TEST SITE LOCATION SIGN



Black letters on white background
 To mark location of a service test of track materials or other test location.
 When length of test site warrants, beginning and end of test site may be marked.

DIMENSIONAL BULGE SIGN



Optional

Black numerals on white background
 To designate, to the nearest tenth of a mile, the location of the beginning or end of the dimensional bulge identified in the time table.
 Located to the outside of main track and siding at each location.

General Operating Instructions (GOI)

Section 13

Air Brake Tests and Procedures

TABLE OF CONTENTS

1.0	General	160
2.0	Locomotive Brake Test	161
3.0	RSC (Safety Control System)	162
4.0	Locomotive and Yard Test Plant Air Pressure Settings	163
5.0	Train Brake Tests	164
6.0	No 1 Brake Test	165
7.0	No 1-A Brake Test	166
8.0	Cars Brake Tested Prior to Adding to a Train	166
9.0	Continuity Test	166
10.0	Brake Pipe Continuity Test (ECP Trains)	167
11.0	Running Brake Test	167
12.0	Train Brake Test Using a Backup Hose or Valve	168
13.0	Snow Plow Brake Test	168
14.0	Block Swaps	168
15.0	Transfer Movements	168
16.0	Movement of Cars and Locomotives with Inoperative Brakes	169
17.0	Recording the Train Brake Status	170
18.0	Trains for Interchange	172

1.0 General**1.1 Purpose**

These test procedures are intended to ensure the safe operation of brakes on all locomotives, freight trains, and passenger trains operating in Canada. These instructions are in compliance with Transport Canada's Railway Freight and Passenger Train Brake Rules.

1.2 Responsibility

Unless otherwise specified, the conductor and/or locomotive engineer are responsible for determining that the required brake test has been completed prior to departure.

1.3 Observe Locomotive Gauges

Brakes will be operated from the lead locomotive.

All air gauges and displays should be observed with sufficient frequency to know that pressures are as required. Should air flow and/or brake pipe gradient increase and continue beyond the limits established in the test procedures, the train crew must take corrective action or seek the assistance of the Central Locomotive Specialist.

1.4 Definitions

- a) **"automatic brake handle"** - the handle, push/pull button, rotary knob or other device used to control the application and release of the automatic brake.
- b) **"block of cars"** means two (2) or more cars that have previously received a No. 1 or No. 1A brake test, as a solid coupled block, for which a record (Brake Status) is available.
- c) **"block swap"** means the addition to a train of a maximum of two (2) solid coupled block(s) of cars that have previously received a No. 1 brake test.
- d) **"brakes"** means pneumatic (air) or electronically controlled pneumatic (ECP) brake systems.
- e) **"calibrated"** - an indication on the Air Flow Indicator at a position that corresponds to a flow of air into the brake pipe of 60 cubic feet per minute (cfm).

- f) **"certified car inspector"** - a mechanical services employee who has been trained and certified to inspect and repair car brake equipment.
- g) **"continuity"** - having the capability to transmit a brake signal between the leading locomotive and the rear of the last piece of equipment of a train.
- h) **"integrity"** - having the unimpaired capability to supply air to the rear of the last piece of equipment of a train.
- i) **"locomotive"** - any on-track equipment intended for propulsion and/or control of freight, passenger, or service equipment and includes locomotives coupled in a consist for multiple operation.
- j) **"operative"** - the brakes on a car or locomotive apply and release and are in suitable condition to retard and stop that equipment.
- k) **"person in charge"** - a person appointed by the Company to ensure the safe conduct of a railway operation, and who is certified according to the appropriate Transport Canada Rules.
- l) **"qualified person"** - a person who has the knowledge, training, and experience to perform a specific duty safely and properly. Train crews are qualified to perform certain brake tests and to perform pre-departure and pull-by inspections.
- m) **"safety inspection"** - a stationary examination of a locomotive or car for safety defects by a person who is certified or qualified according to the appropriate Transport Canada Rules, to verify that it may move safely or to identify defects which require correction.
- n) **"safety inspection location"** - a location designated by the Company, and recorded with Transport Canada, where persons are employed for the purpose of performing safety inspections on cars and/or locomotives.
- o) **"terminal area"** - a location that includes one or more yards together with the tracks connecting the yard or yards and industries within that area.

2.0 Locomotive Brake Test**2.1 Perform a locomotive air brake test when:**

- a locomotive has been:
 - placed into service after maintenance,
 - repaired,
 - altered by adding a locomotive, setting off a locomotive from the middle of the consist, or changing operating ends. (A locomotive brake test is not required when setting off the trailing locomotive(s) in a consist.)
- a locomotive engineer takes charge of a locomotive, except when changing off with another locomotive engineer, or as provided in 2.2 below.

2.2 Locomotive Brake Test Information

- If locomotive brake tests are performed by qualified persons other than the locomotive engineer, then prior to departure, the locomotive engineer must confirm the brake test was completed by obtaining the results:
 - in writing (Schedule B form),
 - in person, or by radio from a person who has immediate access to the test results.
- If the results of the brake test are made available to the locomotive engineer, and if the locomotive has not been placed in active service, then another brake test is NOT required, regardless of time elapsed.
- If the results of the brake test are NOT made available, then the locomotive engineer must perform the brake test.

Examples:

- 1) A yard crew takes a locomotive consist off the shop track that has a schedule B and places the consist on a train. Is another locomotive brake test required when the outgoing crew takes control?

Yes, once the yard crew takes control of the consist, it has been placed in active service and unless a direct transfer occurs between the locomotive engineers of the yard crew and the outgoing crew, another locomotive brake test must be performed.

- 2) A train is secured and staged for several hours. Is a locomotive brake test required, when the outgoing crew takes control?

Yes, unless a personal transfer takes place between the incoming and outgoing locomotive engineers, a locomotive brake test is required.

2.3 Locomotive Brake Test Procedure

Step	Description
1	Ensure the locomotive is protected from unintended movement.
2	Place the automatic brake handle in the release position for at least 2 minutes, to ensure the locomotive air brake system is sufficiently charged.
3	Fully apply and release the independent brakes.
4	Make a 15 psi brake pipe reduction and release the locomotive brakes by depressing the independent brake handle (bail) for at least 4 seconds for each locomotive in the consist.
5	Make a further brake pipe reduction (Full Service) and then release the automatic brake.
6	Test the operation and recovery of the Safety Control System, except when adding a trailing locomotive(s).
Note	A qualified person must be positioned on the ground to observe that all brake pistons extend and retract as intended on the locomotives being tested.

2.4 Distr Pwr: Remote Locomotive Air Brakes

To verify the brakes on the remote consist(s) are functioning as intended, observe the decrease and increase of the remote consist(s) brake cylinder pressure on the controlling locomotive's Distr Pwr screen. It is not necessary for a qualified person to be positioned at the remote consist(s) to observe brake pistons.

3.0 RSC (Safety Control System)**3.1 Locomotive Safety Control System and Test Procedure**

Except as provided for in Item 3.2 of these instructions, every controlling locomotive must be equipped with an operative safety control system capable of initiating a full service brake application and removing all tractive effort in the event that the locomotive engineer becomes inattentive or incapacitated.

A controlling locomotive must be equipped with a reset safety control (RSC) except when in yard or designated service. A controlling locomotive in yard or designated service must be equipped with a RSC or a safety control foot pedal.

Test Procedure

Step	Description
1	Ensure the locomotive is protected from unintended movement.
2	Ensure the safety control valve or switch is cut-IN and sealed.
3	Initiate a penalty brake application by placing the automatic and independent brake handles in release position.
4	Ensure the audible alarm and warning lights (RSC) or warning whistle (safety control foot pedal) is functioning.
5	Ensure the PC, PCS, or Power Off indicator light illuminates.
6	Ensure equalizing reservoir pressure reduces to zero.
7	Recover Penalty brake application.

3.2 Movement with a Defective Safety Control System: Road Locomotives

A movement must not depart an initial terminal or regular crew change location with a defective safety control system on the controlling locomotive.

NOTE: The Safety Control System on a locomotive is considered defective, when the activation of the RSC fails to initiate a penalty brake application as required.

The safety control cock or switch must be cut-IN and sealed at all times, except for enroute malfunctions. Any practice or action which otherwise interferes with the normal and

proper functioning of this equipment will be considered a dismissible offence.

NOTE: If a safety control system seal is found to be missing, but the safety control system is functioning properly, the locomotive may continue in service providing all of the following actions are performed:

- Check the Crew to Crew form and with the Central Locomotive Specialist (CLS) to ensure that the safety control system has no known malfunctions.
- Test the Safety Control system as per Item 3.1.
- If the safety control system is functioning properly, record on the Crew to Crew form and advise CLS that "Locomotive CP XXXX Safety Control system seal is missing, no other malfunctions."

On en route locomotives, the seal must be replaced upon arrival at Coquitlam, Calgary, Winnipeg, Toronto or Montreal.

If the safety control system completely malfunctions while enroute (e.g., non-recoverable penalty brake application), then the locomotive engineer must:

Step	Description
1	Immediately notify the RTC and the Central Locomotive Specialist of the situation and record the defect on the Crew to Crew Form.
2	Cut out the Safety Control cock or switch.
3	Proceed to the first location where the controlling locomotive can be exchanged with another locomotive with an operative RSC.
4	In the event that an exchange locomotive is not available, the movement may proceed to the next regular crew change location and must not proceed beyond that point until the safety control system has been repaired or the defective locomotive replaced.

3.3 Movement with a Defective Safety Control System: Yard Locomotives

In the event of a complete malfunction of the safety control system on a yard locomotive while in active service, the safety control system may be cut-out and the locomotive may be operated to a repair facility or to the regular tie-up track within that yard. The Central Locomotive Specialist must be advised.

3.4 Defective Locomotive Event Recorder

If it is determined by the Central Locomotive Specialist or other Mechanical Service's Employee that the event recorder has failed on a controlling locomotive, be governed by items 3.2 and 3.3 (e.g., defective Safety Control Systems on road and yard locomotives).

NOTE: If the alarm on a RSC is operating erratically, the event recorder may be defective and the provisions for a defective Safety Control System apply. This determination will be made by the Locomotive Specialist.

4.0 Locomotive and Yard Test Plant Air Pressure Settings

4.1 Brake Pipe Pressure

Standard brake pipe pressure with automatic brake handle in release position:

- for passenger service is 90 psi.
- for freight service is 90 psi.
- yard test plant is 75 psi.

Specific trains or territories may require brake pipe pressure to be set higher or lower than standard.

Note: beltpack (RCLS) locomotives may operate at 85 psi until a 90 psi software modification is complete).

4.2 Main Reservoir/Brake Pipe Pressure Differential

With the automatic brake handle in release position, main reservoir pressure must be at least 15 psi higher than locomotive brake pipe pressure.

4.3 Independent Brake Cylinder Pressure

With the independent brake handle in full application position, brake cylinder pressure must be set to the pressure posted in the locomotive cab.

4.4 Equalizing Reservoir / Brake Pipe Pressure

The maximum variance between equalizing reservoir and locomotive brake pipe pressure is 3 psi with the automatic brake handle in the release position.

4.5 Enroute Brake Pipe Pressure Requirements

If brake pipe air flow exceeds 60 CFM or brake pipe gradient (between lead locomotive and rear car) exceeds 15 psi, when automatic brake handle is in the release position, other than during intended brake application and/or release activity, corrective action must be taken if the flow or gradient do not return to acceptable limits within a reasonable period of time.

This may include stopping the train at the next available location and inspecting for leaks.

5.0 Train Brake Tests

NOTE: A freight train having received a No.1 or 1A brake test may only depart a terminal if:

- a) the train line brake pipe pressure on the tail end of the train is within fifteen (15) psi of the locomotive brake pipe pressure, and,
- b) air flow to the brake pipe does not exceed sixty (60) cubic feet per minute, as indicated by the flow indicator or brake pipe leakage does not exceed five (5) psi in sixty (60) seconds.

5.1 Brake Test Overview

Follow the train air brake test procedure described in 5.2, and 5.3 to complete each of the brake tests outlined below. Please refer to the detailed instructions for each of these train air brake tests on the next pages.

Test	Item	Location	Performed by	Operative Brakes	Car Brakes Inspected
No 1	6.0	Safety inspection location	Certified Car Inspector	95%	All
No 1-A	7.0	Initial (not a safety inspection location) and / or En Route	Train Crew, and/or Certified Car Inspector	85%	All or Cars added + rear car
Continuity	9.0	Initial or En route	Train Crew, and/or Certified Car Inspector	95% or 85%	Last piece of equipment
Transfer	15.3	Prior to departure, the locomotive engineer, or RCLS operator must verify that there is sufficient braking effort to control the transfer, confirmed by a running test as soon as possible. Note: Except where block signals provide protection, transfers must have air applied throughout the entire equipment consist and the last three cars, if applicable must be verified to have operative brakes. (Train Brake Status may be used)			
Note: if an emergency brake application occurs while performing any of the above brake tests, then consider the test unsuccessful. The brake test must be repeated until a service brake application applies properly (without going in emergency).					

5.2 Before performing a train brake test complete the following steps:

Step	Description
1	Properly position all cocks and valves.
2	Couple brake pipe air hoses.
3	Release hand brakes unless required because of grade.
4	Ensure the rear car is charged to within 15 psi of locomotive brake pipe pressure.
5	If using the Air Flow Method, the Air Flow Indicator must be calibrated. (Indicator at or below 60 cfm.)

5.3 Train Brake Test Procedure: Air Flow Method

The Air Flow Method is the preferred Train Brake Test Method. To use this method, the controlling locomotive must:

- be equipped with an EPIC or CCB electronic brake controller or 26L or equivalent brake equipment,
- have an operative Air Flow Indicator.

Step	Description
1	When a signal is given to apply the brakes, make a full service brake pipe reduction.
2	When a signal is given to release the brakes, release the automatic brake.
3	Report the train brake test results to the conductor or locomotive engineer.

5.4 Train Brake Test Procedure: Brake Pipe Leakage Method

Note: Use this method only if the Air Flow Method cannot be used.

Step	Description
1	When a signal is given to apply the brakes, make a 15 psi brake pipe reduction.
2	When exhaust ceases, wait 60 seconds.
3	Cut-out the automatic brake. Wait 60seconds.
4	Note brake pipe pressure. Wait 60 seconds.
5	Note brake pipe pressure again. Pressure drop must not have exceeded 5 psi.
6	Reduce equalizing reservoir pressure 3 psi below brake pipe pressure.
7	Cut-in the automatic brake.
8	Make a full service brake pipe reduction.
9	When a signal is given to release the brakes, release the automatic brake.
10	Report the train brake test results to the conductor or locomotive engineer.

5.5 Use of TIBS

On trains equipped with TIBS, the decrease and increase of rear car brake pipe pressure as displayed in the controlling locomotive cab, will provide an indication of the application and release of the air brake on the rear car and of continuity between the locomotive and the rear car.

5.6 Inspecting for Brake Release

To determine if the brakes are released, either a standing inspection, or a pull-by inspection at a speed not exceeding 5 MPH is acceptable. When a pull-by inspection is performed, radio communication with the locomotive engineer must be maintained. The locomotive engineer must be advised of the results of the inspection.

6.0 No 1 Brake Test

6.1 A No 1 Brake Test:

- is performed by a certified car inspector
 - where a train is made up or on cars added or interchanged at a safety inspection location,
 - and while enroute at any subsequent safety inspection location(s) designated for that train.
- verifies the integrity and continuity of the brake pipe.
- verifies piston travel and the condition of brake rigging on each car in the train.
- verifies the application and release of air brakes on each car in the train.

Exception: A No 1 brake test is not required on: Trains operating over main tracks, between yards, up to a maximum of a thirty (30) mile radius, which are engaged exclusively in the setting off or lifting of equipment at industry(s), and/or the transfer of equipment between yards.

6.2 If a train is made up at other than a safety inspection location, a No 1 brake test will be performed at the first safety inspection location designated for that train.

6.3 At locations where a No 1 brake test has been performed, the conductor or locomotive engineer, is responsible to ensure that the brake status information for that train is recorded on the Crew to Crew Form. The results of this brake test may be obtained in writing, in person, or by radio from a person who has immediate access to the test results.

6.4 Perform the No 1 Brake Test following the procedures described in items 5.2 and 5.3.

7.0 No 1-A Brake Test**7.1 A No 1-A Brake Test:**

- is performed by the train crew or a certified car inspector:
 - where a train is made up at other than a safety inspection location.
 - when an enroute train is extensively switched, except where solid blocks of 2 or more cars are remarshalled within the same train.
 - at an interchange location when Train Brake Status records are not available.
 - when cars which have not been previously tested are added to a train.
 - on trains operating over main tracks, between yards, up to a maximum of a thirty (30) mile radius, which are engaged exclusively in the setting off or lifting of equipment at industry(s), and/or the transfer of equipment between yards.
- verifies the integrity and continuity of the brake pipe.
- verifies the application and release of air brakes on each car in the train.

7.2 Perform the No 1-A Brake Test following the procedures described in items 5.2 and 5.3.**8.0 Cars Brake Tested Prior to Adding to a Train****8.1 A No 1A Brake Test is not required on blocks of cars lifted en-route that have:**

- previously received a No.1 brake test; and/or
- previously received a No.1A brake test at that location within twenty-four (24) hours of the lift.

Note: In both circumstances the brake status information must be received.

8.2 Cars Brake Tested Prior to Adding to a Train

When it is required to perform a brake test on cars before adding them to the train and it is not possible to determine brake pipe pressure on the last car being added, the brake test may be performed when:

- the last car being added has had the air cut in for at least 5 minutes, AND
- it is verified that the Air Flow indicator is calibrated.

After the cars are placed on the train, a **Continuity Test** must be performed before proceeding.

9.0 Continuity Test**9.1 A Continuity Test**

- is performed by a qualified person(s) when:
 - solid block(s) of coupled cars which have received a No 1 or No 1A brake test are added to a train.
 - the controlling locomotive has been attached to a train which has received a No 1 or No 1A brake test.
 - the locomotive consist has been exchanged or altered.
 - the locomotive engineer has been changed.
 - controlling ends of a locomotive consist or a push-pull train operation have been changed.
- verifies the capability to transmit a signal between the leading locomotive, to the rear of the last piece of equipment on the train.

9.2 When the brake pipe has been uncoupled to set off cars or the trailing locomotive(s) in the consist, and when cars or locomotives have not been added to the train, it is only necessary to re-couple the brake pipe and establish brake pipe continuity (e.g. air rising on last piece of equipment).

9.3 A locomotive engineer must perform a brake pipe continuity test immediately prior to leaving if:

- the train does not leave the terminal immediately upon completion of the brake test,
- stops are made and there is public access to the train,
- public crossings are blocked,
- any time that brake pipe continuity is suspect.

OR

- when performing a crew change continuity test, the inbound engineer performs Steps 1, 2 and the note and the outgoing engineer performs steps 3, 4 and 5. Integrity must be confirmed.

9.4 Continuity Test Procedure:

Step	Description
1	Make at least a 15 psi brake pipe reduction and ensure that brake pipe pressure has decreased at the rear of the train.
2	Wait for the exhaust to cease.
Note	On Distributed Power trains, the remote brake valve/feed valve(s) must be cut out prior to releasing the automatic brake.
3	When ready to proceed, release the automatic brake.
4	Ensure that brake pipe pressure is increasing at the rear of the train.
5	Train may be started after the brakes release.

9.5 Commuter trains which are not equipped with a calibrated air flow indicator.

If you are performing a **continuity** test after changing ends, you are exempt from the requirements of GOI Section 13, item 5.2, step 5 (air flow indicator calibration) and item 5.4 (brake pipe leakage test). Ensure rear of train is charged to within 15 PSI of head end and when given a signal to apply the brakes, make a full service reduction. This only applies on commuter trains and only applies when performing a **continuity** test after changing ends. If you are performing a No 1 or No 1A brake test, then you must perform a brake pipe leakage test.

10.0 Brake Pipe Continuity Test (ECP Trains)

10.1 Although the ECP system has safeguards built in to protect continuity, the following test can be used to confirm brake pipe continuity through the train.

10.2 Continuity Test Procedure for ECP Trains:

Step	Description
1	Command a full service brake application (100% TBC) and note the slight drop in brake pipe pressure at the rear of the train. Note: On a Wired Distributed Power train, the Feed Valve(s) must be cut-out on the remote(s) prior to commanding the full service brake application.
2	When the main operating screen indicates that Train Brake Effort (TBE) reaches 85% or greater, then release the brake immediately (0% TBC).
3	Look for the rise of brake pipe pressure on the EOT.
4	On Wired Distributed Power trains feed valve(s) on the remote(s) can now be cut in.

11.0 Running Brake Test

11.1 A running brake test must be made on all trains prior to descending grades of 2 percent or greater and at locations specified in special instructions.

A running brake test of passenger train brakes must be made after leaving any location where any standing train air brake test was made.

11.2 Running Brake Test Procedure

Step	Description
1	When the speed of the train permits, apply the train brakes with sufficient force to verify the brakes are operating properly.
2	The locomotive brakes should not be allowed to apply at this time.
3	If the brakes do not operate properly, immediately stop the train, determine and correct the cause of failure, then repeat the running brake test.

12.0 Train Brake Test Using a Backup Hose or Valve

12.1 Before starting a train from any location where the air brakes are to be controlled by the use of a back-up hose or valve at the rear of the train, the air brakes must be tested as follows:

Step	Description
1	When a signal is received from the rear of the train that the brakes are to be applied, the locomotive engineer will cut out the automatic brake.
2	When a signal is received from the rear of the train that the brakes are to be released, the locomotive engineer will cut in the automatic brake.
3	It must be verified that the train brakes have been applied and have released at the front and the rear of the train.

13.0 Snow Plow Brake Test

13.1 Following the appropriate train brake test, and before starting a snow plow operation, an emergency application of train brakes must be obtained from the operator's cab of the snow plow.

14.0 Block Swaps

14.1 A maximum of two (2) solid coupled block(s) of 2 or more cars removed from a train may be added to another train, or CUT INTO the same train, with only a Continuity test, provided that:

Item	Condition
1	Each block of cars being added has: <ul style="list-style-type: none"> • received a No 1 brake test at a prior location, and • remained coupled together, and • been off air for less than 24 hours (48 hours with notification to TC) • train brake status information that includes: <ul style="list-style-type: none"> - date - location - number of cars previously tested with a No 1 brake test - car number and location of any car in the block with inoperative brakes
2	The conductor or locomotive engineer must: <ul style="list-style-type: none"> • receive the train brake status information for those cars being added (in writing or verbally), and • update the train brake status information on the Crew to Crew Form.

15.0 Transfer Movements**15.1 Transfer Brake Test**

A brake test is NOT required for transfer movements, providing:

Prior to departure, the locomotive engineer, or the RCLS operator must verify that there is sufficient braking effort to control the transfer, confirmed by a running test as soon as possible.

Except where block signals provide protection, transfers must have air applied throughout the entire equipment consist and the last three cars, if applicable, must be verified to have operative brakes.

IMPORTANT: Transfers carrying dangerous goods MUST have air cut-IN throughout the equipment consist, without exception.

16.0 Movement of Cars and Locomotives with Inoperative Brakes

16.1 Cars and locomotives with inoperative brakes may be moved in trains for the purpose of unloading or for repair if all applicable parts of this section are complied with.

Prior to departure, the conductor or locomotive engineer must be notified of any inoperative car or locomotive brakes, and their location.

Inoperative brake information must be recorded on the Crew to Crew Form, and on Form 1225.

16.2 To calculate the percentage of operative train brakes, include both locomotives and cars.

16.3 Safety Inspection Locations - 95 percent operative brakes

Item	Requirements and Exceptions
1	When a train is made up at a safety inspection location, it must have 95 percent operative train brakes.
	Exception: Trains destined for the USA must have 100 percent operative brakes when leaving the latter of origin or safety inspection location.
2	Cars permitted to depart from a safety inspection location with inoperative brakes, may be moved only for unloading or for repair.
3	When cars are added to a train at a safety inspection location, the train must not depart unless a minimum of 95 percent of the brakes on those cars added are operative.
4	When it is impractical to comply with the 95 percent requirements, trains of 18 cars or less may leave a safety inspection location with no less than 85 percent operative brakes. Appropriate actions must be taken to ensure safe operation (e.g., reduce speed).
5	Cars or locomotives with brakes inoperative <u>due to damage</u> may be moved in a train with less than 95 percent operative brakes when authorized by a person in charge who will ensure that appropriate measures have been taken to move such equipment safely.

16.4 Locations other than Safety Inspection Locations - 85 percent operative brakes

Item	Requirements and Exceptions
1	A freight train must not be operated with less than 85 percent of train brakes operative, except as provided in item 2 below.
2	Cars or locomotives with brakes inoperative <u>due to damage</u> may be moved in a train with less than 85 percent operative brakes when authorized by a person in charge who will ensure that appropriate measures have been taken to move such equipment safely.
3	A passenger train must not be operated with less than 85 percent of train brakes operative, unless an appropriate reduction in train speed, as determined by the locomotive engineer, is made.

16.5 Locomotives with inoperative brakes:

Item	Requirements
1	The lead locomotive must have operative brakes at all times.
2	The air brake system of all trailing locomotives must be cut-IN so as to respond to the operation of the automatic brake and independent brake in the controlling locomotive, except when a locomotive with inoperative brakes is being moved for repair.
3	The locomotive engineer must be advised prior to departure when a locomotive in the consist has inoperative brakes.
4	When a locomotive in a consist has inoperative brakes, the locomotive engineer must take appropriate measures to ensure safety of movement.
5	No more than 2 locomotives with inoperative brakes may be handled in a locomotive consist. (They may be coupled together.)

16.6 Cars with inoperative brakes:

Item	Requirements
1	Cut-out the brakes on all cars or trucks, where appropriate. (Complete Form 1225.)
2	No more than 2 cars with inoperative brakes may be coupled together, except in the case of item 3 below.
3	Multi-platform articulated cars must not be operated with more than 2 consecutive control valves cut out. (typically 3 control valves on a 5 platform car).
4	<p>The rear 3 cars (cars, equipment or locomotives) of a freight train must have operative brakes, except:</p> <ul style="list-style-type: none"> - a 2 axle scale test car without brakes may be moved in a freight train provided it is placed ahead of the rear car of the train and it is coupled to cars with operative brakes. - other test cars (e.g. Track Evaluation Cars) may be moved at the rear of a freight train for test purposes, provided it is coupled to a car with operative brakes. <p>Note: on cars of articulated or permanently coupled multi-platform design, at least fifty (50) per cent of the control valves must be operational for car to be considered as having operative brakes.</p> <p>In accordance with company procedures, the person in charge may move cars or locomotives with inoperative brakes, due to damage enroute, at the rear of the train when no other option exists.</p>
5	The rear car of a passenger train must have operative brakes on one truck.
6	Railway equipment which is designed without brakes may operate in a freight train.

17.0 Recording the Train Brake Status**17.1 Train Brake Status following No 1 or No 1A Brake Test**

The results of a No 1 brake test, including pre-tested blocks of cars, will be recorded on a Train Brake Status form in a readily accessible computer file.

If assistance is required to retrieve Train Brake Status, contact the Central Locomotive Specialist at 1-800-308-6426.

Crews will receive the results of a No 1 brake test verbally or will receive a copy of the Train Brake Status form from the file and immediately record these results in Part 5 of the Crew to Crew Form (see example). At locations where a train receives a No 1 or No 1A brake test, the conductor must record the following information on the Crew to Crew Form in the Grey Box: date, Conductor or Carman's name, train ID, location, number of cars on the train, "OK" or any exceptions.

Example:

Train Brake Status: (GOI Sec. 13 – 17.0 or ABTHR Section 9)

No 1	brake test performed at	Toronto Yard	by	Carman Jones
No 1, No 1A, Class 1, Class 1A	Location		conductor/ carman	
at	10:25	12-25-2003	Number of cars tested	49
time		date		
CP 203458 C/O 13 cars from head end				
List of cars "cut-out" or all "OK"				

17.2 Updating the Train Brake Status

Prior to arriving at each crew change point or terminal enroute, the conductor must update Part 5 of the Crew to Crew Form, (see example) indicating the date, conductor's name, train ID, name of crew change point or terminal, number of cars on the train, "OK" or any exceptions noted.

The originating crew who has recorded the results of the No 1 or No 1A brake test, in the Grey Box, is also required to record brake status when the train arrives at the next crew change point or terminal. All other crews must ensure brake status is updated and recorded, as per example below, prior to delivery at the next crew change point or terminal, regardless if any changes have occurred.

Example:

Date	Conductor	Station Name	Car Total	List cars "cut-out" or all "OK"	Location from Eng	Rear Car Pressure
12/25	Green	MacTier	49	CP 203458 C/O	13	88 PSI
12/26	Adams	Cartier	49	CP 203458 C/O	13	87 PSI

The **original** and **subsequent** Crew to Crew Form(s) must be kept with the other documents (waybills, consist, etc.) while enroute. At locations where locomotives are changed off and/or sent to the shop, a copy of this form(s) must be left with the other documents (waybills, consist, etc.), not on the locomotives. The

conductor is responsible to ensure the proper handling of these documents. The conductor must make Train Brake Status available to the locomotive engineer prior to leaving a crew change point or terminal.

The **original** and **subsequent** Crew to Crew form(s) must remain with the train to destination. The Crew to Crew form(s) must be kept current and updated prior to delivery at the next crew change point or terminal. (i.e. when picking up and setting out cars enroute)

On arrival at the final destination the original and subsequent Crew to Crew form(s) must be submitted and retained for a period of thirty (30) days.

The requirement to record train brake status does not change any other reporting requirements. Crews are reminded of the requirements of GOI Section 5, item 16.0 "Reporting Detention or Defects" which requires the conductor to complete Form 1225 when repairs have been made enroute, including any air brakes which have been cut out.

17.3 Train Brake Status Lost Enroute

If the record of Train Brake Status is not available at a crew change point, and if the incoming crew cannot be contacted to verbally provide train brake status, then a No 1 or No 1A brake test must be performed before the train may proceed. This information must be recorded in the **Grey Box**.

The following Q & A's are provided to further clarify the instructions:

Q. I am on a train that does not have Train Brake Status form (Crew to Crew). We have contacted our immediate supervisor and they have contacted the incoming conductor who has provided the necessary information. Is it acceptable for the supervisor to relay this information?

A. Yes, the information, including who provided it, must be noted on the Crew to Crew form.

Q. I have entered the relayed information on to part 5 of a new Crew to Crew form. Do I need the initial information from the No 1 brake test at the originating terminal to enter into the Grey Box?

A. No, provided the incoming conductor has confirmed that the initial brake test information was provided or the RTC / Locomotive Specialist confirms that it is available, a notation can be made in the Gray Box that the initial

Train Brake Status form is missing and the information can be obtained from the central locomotive specialist. The only exception is a train destined to the USA must have the Grey box information filled out, including the full name of the individual who performed the test (i.e.: initials are not acceptable and the name must be legible).

Q. I am on a train at its initial location and have been informed that a No 1 brake test has been performed on the train, however there is no Train Brake Status information available on the train. What process do I follow in regards to receiving the information?

A. First contact the mechanical personnel or your immediate supervisor to provide the necessary information. If unavailable, then the central locomotive specialist would be contacted for the information. **Note:** The central locomotive specialist can only provide the information to the train at its original made up location as they cannot account for cars that may have been lifted or set off enroute.

Q. What are the procedures in regards to the Train Brake Status information when changing off with an incoming crew from another railway at interchange?

A. The Train Brake Status may be available in several forms. It can be provided on a separate Train Brake Status Form or a document similar to our CP Crew to Crew form. In other situations, the information can be obtained from the other railways train consist. This process may differ from railway to railway and for that reason, your local supervisor can best advise as to the procedure required in your area. As per item 18.3, the Brake Status information must be transferred to CP's Crew to Crew form and maintained and updated as required.

Q. If the Train Brake Status information in the Grey box is missing, however the previous crew(s) have entered the brake status information in the non shaded area of Part 5, is it permissible to depart with this information?

A. Yes, it is permissible to depart. In this case you would contact the RTC or the Central Locomotive Specialist and confirm that the initial Brake Test information is available and make the notation in the Grey Box. As stated above the CLS will not provide the information of the initial test, as they cannot account for cars that may have been lifted or set off enroute, but they can confirm that the information is available.

18.0 Trains for Interchange**18.1 Entering the USA from Canada**

Trains which are destined for the United States of America (USA) must have 100 percent operative brakes upon departure from the latter of the initial terminal or an enroute safety inspection location. No train may be operated into the USA at any time with less than 85 percent operative brakes. Cars destined for the USA with inoperative brakes or any other identified safety defects must not be moved past the next location where repairs of that type can reasonably be made.

A Crew to Crew Form, complete with train brake status information should be made available for train crews receiving trains from Canada.

18.2 Entering Canada from the USA

When a train enters Canada from the USA and is accompanied with train brake status information which verifies that a prior initial terminal or 1000 mile brake test has been performed on that train, then a No 1 or No 1A brake test is not required. In this case, a Continuity test must be performed.

The train brake status information received at interchange must be transferred to CP's Crew to Crew Form and continue to be maintained and updated as required.

If the necessary train brake status information does not accompany the train, then a No 1 or No 1A brake test must be performed.

18.3 Trains Interchanging within Canada

When a train is received from another railway within Canada and is accompanied with train brake status information, then another No 1 or No 1A brake test is not required. In this case, a Continuity test must be performed.

The train brake status information received at interchange must be transferred to CP's Crew to Crew Form and continue to be maintained and updated as required.

If the necessary train brake status information does not accompany the train, then a No 1 or No 1A brake test must be performed.

A Crew to Crew Form, complete with train brake status information should be made available for train crews of other railways receiving trains from CP.

General Operating Instructions (GOI)

Section 14

Hand Brakes – Leaving Equipment

TABLE OF CONTENTS

1.0	Hand Brake Policy	174
2.0	Leaving a Portion of a Train Standing with Emergency Air Brakes Applied	176
3.0	Leaving a Train Unattended	177
4.0	Leaving a Locomotive.....	178
5.0	Spotting of Equipment Prohibited Sign.....	178
6.0	Winter Operation (Nov 15 – Mar 15) - Air Conservation Instruction.....	179

NOTE: In the following instructions, a car or locomotive is considered "unattended" when no crew member is close enough to the equipment to take safe and effective action to control its movement.

NOTE: Reference to hand brakes on locomotives includes electric parking brakes on SD90MAC locomotives.

1.0 Hand Brake Policy

IMPORTANT: Crew members are responsible to **inquire** and **confirm** with each other that equipment is left in accordance with these instructions.

1.1 Leaving Railway Equipment Unattended; the following instructions apply:

A	A single car must ALWAYS be left with the hand brake applied.
B	More than two cars ALWAYS require at least TWO hand brakes.
C	Never leave a car with a defective hand brake by itself. It must be coupled to another car with an effective hand brake.
D	Individual blocks of cars must be secured with hand brakes on each block.
E	Hand brakes must be applied on the cars which are at the low end of a downward sloping track.
F	When leaving equipment in a track equipped with a derail, it should be left as close as practical to the derail (about 100 feet). This does not include cars which have been spotted for loading/unloading, repair or cars being handled while switching. Operating Rules which govern proximity to public crossings at grade still apply.
G	When leaving railway equipment, the MINIMUM number of hand brakes must be applied as indicated in the following chart. Additional hand brakes may be required; factors which must be considered are: <ul style="list-style-type: none"> - total number of cars - cars loaded or empty - track grade - hand brake force applied
<i>Continued</i> →	

HAND BRAKE CHART			
CAUTION: Chart indicates the MINIMUM number of hand brakes to be applied.			
Cars	Hand Brakes	Cars	Hand Brakes
1 - 2	1	60 - 69	8
3 - 9	2	70 - 79	9
10 - 19	3	80 - 89	10
20 - 29	4	90 - 99	11
30 - 39	5	100 - 109	12
40 - 49	6	110 - 119	13
50 - 59	7	120 Plus	(divide by 10 add 2)
H	In reference to the minimum number of hand brakes in the preceding chart, it is acceptable to include the hand brakes applied on locomotives.		
I	On multi-platform cars, each platform is to be considered one car. However, if a multi-platform car has only 1 or 2 hand brakes for 3 to 5 platforms, it may be considered that the minimum requirement is met for that car.		
J	There may be situations where all hand brakes should be applied.		
K	It will be acceptable to apply less than the minimum number of hand brakes when so specified in special instructions, subdivision footnotes or operating bulletin.		

1.2 Testing Hand Brake Effectiveness

In the application of CROR Rule 112(b) "moving the cut of cars slightly", on CP the following will be used to meet the requirement of the rule:

To ensure an adequate number of hand brakes are applied, release all air brakes and allow or cause the slack to adjust. It must be apparent when slack runs in or out, that the hand brakes are sufficient to prevent that cut of cars from moving. This must be done before uncoupling or before leaving equipment unattended.

1.3 Switching and Handling Equipment

A	While switching, when a car or block of cars is left standing without air brakes applied, always apply at least one hand brake. Increase the number of hand brakes as required until it is apparent that the number of hand brakes applied are sufficient to prevent that cut of cars from moving.
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14

B	<p>During switching, emergency air brake applications must not be relied upon to hold equipment stationary for short periods of time unless.</p> <p>i) there are at least 10 cars which are sufficiently charged with air AND</p> <p>ii) a crew member is in close enough proximity to safely apply hand brakes if unintended movement occurs.</p>
C	<p>After being coupled to, no car or cut of cars may be pushed or shoved until it is known that a proper coupling has been made. The slack must be taken or be seen to run out on all cars to be moved.</p>
D	<p>When it is required to remove cars from the low end of a downward sloping track, ensure that any cars to be left standing are properly secured.</p>
E	<p>After switching has been completed, and the cars are being left, comply with items 1.1 and 1.2 above.</p>
F	<p>When a car movement is to be controlled by hand brake(s), the hand brake(s) must be tested and determined to be in good order before car(s) are cut off.</p>
G	<p>Cars cut-off in motion (flat switching):</p> <p>i) Do not uncouple or allow car(s) to move under their own momentum onto standing cars unless it is positively known that the number of hand brakes applied on the standing cars are sufficient to prevent movement of all cars. To determine the minimum number of hand brakes required, add the total number of standing cars with the number of cars to be cut-off in motion.</p> <p>For example;</p> <ul style="list-style-type: none"> • there are 9 cars standing (with 2 hand brakes applied). • it is intended to cut-off in motion 4 additional cars. • so that the total number of cars being left equals 13. • according to the chart in item 1.1, 13 cars requires 3 hand brakes and so on. • the 3rd hand brake must be applied before the additional cars are cut-off in motion. <p>ii) In the application of the instruction above, do not rely on emergency air brake applications to prevent movement of the standing cars (i.e., instead of hand brakes) unless you have complied with item 1.3 (B) (e.g., there are at least 10 cars with emergency brakes applied etc.).</p>

1.4 Hand Brake Application Procedures

A	<p>Apply a hand brake with air brake released or brake cylinder bled off. Do not attempt to bleed a car off with SERVICE brake applications in effect as this can trigger an undesired release of all other cars.</p>
B	<p>It is not always practicable to apply hand brakes with the air brakes released (e.g., heavy grades with heavy cars or when providing 3 point protection). When an air brake application is required, it must be as light an application as possible to prevent movement while hand brakes are being applied.</p>
C	<p>When applying a hand brake, it must be applied fully.</p>
D	<p>Under winter conditions ensure braking surfaces are free of ice and snow.</p>

1.5 Wreck Damaged Equipment.

When hand brakes have been damaged due to derailment or mishap, it may be necessary to secure equipment with wheel chocks or chains. These devices will be placed by Mechanical Services personnel and are designed for this purpose. In these cases, running trades employees should be governed by the officer in charge.

1.6 Releasing Hand Brakes

A	<p>Hand brakes have the ability to provide far more brake shoe force than the air brakes; therefore to avoid damage to wheels, hand brakes must be FULLY RELEASED before moving car(s).</p>
B	<p>When releasing a hand brake, it may be determined that it is properly released by ensuring that the bell crank has dropped and that the vertical rod and chain are slack.</p> <p>Note: Do not depend on brake shoes being clear of the wheels as on many cars the hand brake applies on the "B" end only.</p>
C	<p>Hand brakes must not be released from cars or trains left standing on a grade until the train air brake system has obtained its fully charged state, unless movement can be prevented with locomotive brakes.</p>



2.0 Leaving a Portion of a Train Standing with Emergency Air Brakes Applied

Example - Stopping a train enroute to lift/set off or switch.

A	<p>BEFORE CLOSING the angle cock on the portion to be moved:</p> <ul style="list-style-type: none"> i) make a service application sufficient to prevent train movement. ii) the service exhaust must stop blowing at the automatic brake. iii) advise the crew member when it is OK to close the angle cock on the portion to be moved. <p>NOTE: On trains equipped with TIBS:</p> <ul style="list-style-type: none"> • the crew member must advise the locomotive engineer when the angle cock has been closed, and then • the locomotive engineer must activate the TIBS emergency braking feature.
B	<p>The standing portion must be left in EMERGENCY with angle cock FULLY OPEN</p> <p>NOTE: Crew members are responsible to inquire and confirm with each other that the standing portion has emergency brakes applied. The FULLY OPEN angle cock may be subsequently closed only when:</p> <ul style="list-style-type: none"> • the angle cock is FULLY OPEN on opposite end of the equipment, OR • a locomotive is coupled on opposite end of the equipment, OR • the equipment has been secured with hand brakes in accordance with the hand brake policy.
C	<p>The following precautions against unintended movement must be taken because brake cylinder pressure might leak off:</p> <p>IMMEDIATE - If the standing portion is LESS THAN 10 CARS, secure with hand brakes immediately.</p> <p>ONE HOUR - On grades 1.5 percent OR LESS, if the standing portion is 10 CARS OR MORE, begin to secure with hand brakes or recouple the locomotive within 1 hour.</p> <p>1/2 HOUR - On grades GREATER THAN 1.5 percent, if the standing portion is 10 CARS OR MORE, begin to secure with hand brakes or recouple the locomotive within 1/2 hour.</p>
<i>Continued</i> →	

	<p>NOTE: Refer to subdivision footnotes to identify locations where grades are greater than 1.5 percent.</p>
	<p>CAUTION: Whenever it is possible that the portion left standing cannot be secured within the applicable time limit, hand brakes must be applied immediately.</p>
	<p>EXAMPLE: A train has stalled on an ascending grade and must “double the hill.” It is doubtful that the portion left standing could be secured within the required time limit. This means it must be secured immediately.</p>
D	<p>In the application of this instruction, hand brakes may be applied near the head end of a train, regardless of low end or high end of a particular grade.</p>
E	<p>Broken Drawbars on Light, Heavy and Mountain Grades</p> <p>If it is not possible to test hand brake effectiveness because of a broken drawbar, and if it is possible that the portion of a train left standing on a grade cannot be secured within the applicable time limit prescribed in paragraph (C) (e.g., 30 or 60 minutes), hand brakes must be applied immediately as follows:</p> <ul style="list-style-type: none"> • On mountain grades apply hand brakes on least 65 % of the cars (unless more than 65% is specified in Time Table subdivision footnotes). • On heavy grades listed in GOI Section 16, Appendix 1, Descending Heavy Grade Job Aid, item 2.0. <ul style="list-style-type: none"> - if the grade is 1.3% to 1.8%, apply hand brakes on at least 50% of the cars. - if the grade is 1.0% to 1.29%, apply hand brakes on at least 25% of the cars. • On grades listed in Time Table subdivision footnotes that are greater than 1.5 percent, apply hand brakes on at least 50% of the cars. • On all other locations, apply hand brakes as per the minimum number of hand brakes chart in item 1.1g).

14

2.1 Locomotives with Vented Brake Pipe Angle Cock

NOTE: Many leased and foreign locomotives are equipped with a “vented brake pipe angle cock”. When closed, the vent will drain brake pipe pressure in the brake pipe hose. This can cause problems when uncoupling, because if brake pipe has already been vented to 0 psi, then the standing portion cannot be placed in emergency.

In the application of item 2.0 (A) above (e.g., leaving a portion of a train standing in emergency):

- **IF** there is a leased or foreign locomotive in the consist, and
- **IF** you are uncoupling immediately next to that foreign or leased locomotive,
- **THEN BEFORE** instructing the crew member on the ground that it is OK to close the angle cock on the portion to be moved,
- **PLACE** the entire movement in **EMERGENCY** using the automatic brake valve.

This instruction applies on switching movements, on conventional trains and on Locotrol equipped trains; it applies if you are hanging on to the foreign or leased locomotive or uncoupling from it.

NOTE 2: This instruction also applies to all SOO locomotives.

3.0 Leaving a Train Unattended

• **with locomotive(s) attached**

In reference to item 1.1 (E) of the hand brake policy (apply hand brakes on the low end of a downward sloping track), trains left unattended with locomotive(s) attached may be left as follows:

A	On an ascending grade, train must be stopped with slack stretched; on other than ascending grade, stop with slack in or out.
B	LOCOMOTIVES must be ATTACHED with brake pipe coupled and angle cocks open.
C	Apply hand brakes on the head end of the train.
D	Test the effectiveness of hand brakes.
E	On the controlling locomotive, the control stand must be left as follows. <ul style="list-style-type: none"> • Independent brake cut-IN and FULLY applied. • Automatic brake cut-IN and handle in RELEASE. • Generator Field OFF, Engine Run ON, Control/Fuel Pump ON. • Engine Control Switch (ECS) to Isolate. • Reverser handle removed. • Take the reverser handle from the cab of all locomotives in the consist except as specified by Section 15 - item 10.3, or except as specified by special instructions, subdivision footnotes or operating bulletin.

CAUTION: If the ECS switch is set to **Isolate** on a AESS equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shut down mode. If brake pipe pressure must be maintained, the ESC switch must be left in the **Run** position.

F	Turn off all unnecessary lights and close all doors and windows. If required by time table or operating instruction, locomotive cab doors should be locked on the lead consist.
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CAUTION: It is imperative that all steps in this procedure be followed. Otherwise, apply hand brakes on the cars which are at the low end of a downward sloping track.

Crew to Crew: When required to leave a train in this manner, the information relative to hand brakes applied and inspection performed must be documented on the Crew to Crew Form as required by GOI Section 5 Item 17.0.



4.0 Leaving a Locomotive

4.1 When Changing off with Another Locomotive Engineer - Coupled With or Without a Train or Cars.

A	Complete Crew to Crew Form
B	Take the reverser handle from the cab of the leading locomotive.

4.2 Leaving locomotive(s) unattended

<ul style="list-style-type: none"> No cars attached / engines running or dead 	
A	<p>A hand brake must be fully applied on EACH locomotive.</p> <p>EXCEPTION: It is not required to apply a handbrake on each locomotive when specified by special instruction, subdivision footnote or operating bulletin. Instructions must indicate the minimum number to be applied and effectiveness must be tested.</p>
B	Test the effectiveness of the hand brakes as per item 1.2. Examine the hand brake system to ensure that the chain is in tension to the point of application.
C	If separating locomotives, close the cocks on all air hoses between the locomotives to be separated, remove the jumper cable(s) and disconnect walkway safety chains. After separation, secure all hoses in the receptacles / dummy couplings (if provided).
D	<p>On the controlling locomotive and/or one of the locomotives left, the control stand must be set as follows:</p> <ul style="list-style-type: none"> Independent brake cut-IN and FULLY applied. Automatic brake cut-IN and handle in RELEASE. Generator Field OFF, Engine Run ON, Control/Fuel Pump ON. Engine Control Switch (ECS) to Isolate. Reverser handle removed. take the reverser handle from the cab of all locomotives in the consist except as specified by Section 15 - item 10.3, or except as specified by special instructions, subdivision footnotes or operating bulletin.
<p>CAUTION: If the ECS switch is set to Isolate on a AESS equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shut down mode. If brake pipe pressure must be maintained, the ESC switch must be left in the Run position.</p>	
E	Turn off all unnecessary lights and close all doors and windows. If required by time table or operating instruction, locomotive cab doors should be locked.
<p><i>Continued</i> →</p>	

F	When separating locomotives, close the cocks on all air hoses between the locomotives to be separated, remove the jumper cable(s) and disconnect walkway safety chains. After separation, secure all hoses in the receptacles / dummy couplings (if provided).
G	Where applicable, Automatic Reporting Unit (ARU) must be connected for monitoring of locomotive.
H	Complete a Crew to Crew Form if necessary.

4.3 Electronic Air Brake (EAB) Failure

WARNING: It is not possible to cut-IN the automatic and independent brake on a locomotive on which the electronic air brake (EAB) system has failed. With a failed EAB system, the locomotive air brake backup mode defaults to trailing locomotive status only. This means the air brakes will eventually leak off. When setting off or leaving a locomotive on which the EAB system has failed, it is especially important that the hand brake effectiveness is tested.

Note: When leaving a locomotive with a failed EAB, after securing the locomotive, the automatic brake handle must be placed in the HO position and the independent brake handle in release.

5.0 Spotting of Equipment Prohibited Sign

If equipment must be left between the Spotting of Equipment Prohibited Sign and the Road Crossing:

Prior to leaving equipment between the sign and the road crossing, a crew member must advise the RTC of the location and estimated distance between the equipment and the crossing. A GBO will be issued restricting movements entering the crossing account restricted sightline. If equipment is left less than 150 feet from a crossing, then manual protection of the crossing must be provided, unless it is seen to be clear of vehicular or pedestrian traffic.

Note: At locations not equipped with signs

A crew member must advise the RTC when equipment causing restricted sightlines is left at locations not equipped with a sign and be governed by instructions from the RTC.

Note: This instruction does not apply to equipment spotted for loading or unloading as per CROR Rule 103(e).

14

6.0 Winter Operation (Nov 15 – Mar 15) - Air Conservation Instruction

WINTER OPERATION AIR CONSERVATION INSTRUCTION	
This instruction applies to trains or portion thereof left unattended at Major Yards or Terminals and at Regular Crew Change Locations	
CONDITIONS...	
<ul style="list-style-type: none"> • This instruction is intended for fueling, set outs or lifts on run through trains only. • Temperature must be below minus five (-5) degrees Celsius. • Does not apply to Locotrol equipped trains. • Does not apply when it is anticipated that the equipment will be left unattended longer than two (2) hours. 	
When at the locations specified and the conditions are met, the following may be applied:	
A	In the application of this instruction, GOI Section 14, item 2.0 (C) does not apply.
B	The train or standing portion must be secured in accordance with the Hand Brake Policy as outlined in Section 14, item 1.0. Note: Local Handbrake Special Instructions apply.
C	Once the train or portion thereof is secured with sufficient handbrakes and their EFFECTIVENESS has been tested, proceed to D .
D	<p>Prior to leaving the standing portion unattended, the brake pipe must be reduced to "ZERO" at a rate that is no less than a service rate reduction, this is accomplished by placing the brake handle into the <u>Handle Off</u> position and waiting for the air to deplete from the train line. The SBU must be observed to ensure "ZERO Pressure".</p> <p>Note: On GE locomotives (except 9500-9683), due to a built in locomotive emergency feature, the brake pipe will only reduce to 10 - 11 psi.</p>
E	TIBS emergency braking feature should not be tripped.
F	Once the air is fully depleted or stabilized (10 - 11 psi as indicated above) at the SBU, the standing portion must be left with the angle cock open.

14

General Operating Instructions (GOI)

Section 15

Locomotive and Train Operation

TABLE OF CONTENTS

1.0	Duties of the Locomotive Engineer	182
2.0	General Instructions	182
3.0	Maximum Speed of Locomotive and Rail Diesel Car Consists.....	183
4.0	Number of Locomotives in a Basic Consist.....	183
5.0	Handling of Locomotives NOT Equipped with Coupler Alignment Control	184
6.0	Operating Restrictions Between Thunder Bay and St-Martin Jct.....	185
7.0	Dead or Disabled Locomotives	185
8.0	Pre-Departure Locomotive Inspections.....	187
9.0	Movements Not Controlled by the Lead Locomotive, Pilots	188
10.0	Winter Operation: Leaving Locomotives Unattended - (Nov 15 - Mar 15).....	188
11.0	Draining A Locomotive In Freezing Weather	189
12.0	Causes of a PCS Operation (Pneumatic Control or Power Cut-off Switch).....	190
13.0	Recovering a PCS Following a Penalty Brake Application	191
14.0	Recovering a PCS Following an Emergency Brake Application	191
15.0	Changing Operating Cab of a Multiple Locomotive Consist	191
16.0	Joining a Locomotive Consist.....	192
17.0	Starting/Stopping the Diesel Engine - Battery Knife Switch.....	192
18.0	Starting/Stopping the Diesel Engine - GMs and GEs	193
19.0	Engine Shutdown Account Crankcase Overpressure	195
20.0	Locomotive Stop Start Systems	195
21.0	Operating over Railway Crossings at Grade.....	196
22.0	Operating Through Water.....	196
23.0	Rail Diesel Cars (RDC)	197
24.0	Locomotive Load Meter.....	197
25.0	Locomotive Speed Indicators	197
26.0	Locomotive Event Recorders & Cameras	198
27.0	Pumping Air	198
28.0	Response to Alarms	198
29.0	Car Equipment Instructions	200
30.0	Work Equipment and Snow Plows - Connecting Air	201
31.0	Overcharged Conditions.....	201
32.0	GE AC Locomotives - Special Instructions	201
33.0	Fire Season and Prevention - Locomotive Exhaust	202
34.0	Broken Drawbar - Locomotive Towing Cable Safety	202
35.0	AC Locomotive Electronic Display Screen Failure.....	203
36.0	Snowblaster Operations – If equipped	204
Appendix 1:	Instructions For Calculation of Haulage Capacity	205
Appendix 2:	Preferred Marshalling Examples: (applicable to items 5.3 and 7.4).....	206

Locomotive and Train Operation

1.0 Duties of the Locomotive Engineer

- 1.1 Locomotive engineers are responsible to ensure they are familiar with current information regarding the systems and mechanical procedures which apply to locomotives in service on CP. Locomotive engineers are responsible for the motive power in their care and when other duties permit, must make every effort to ensure their efficient and productive operation.
- 1.2 The locomotive engineer must take charge, inspect and leave the train in ways that ensure safe operation of both the locomotive and train.
- 1.3 Central Locomotive Specialist's (CLS) provide 24-hour assistance to crew to troubleshoot enroute locomotive problems. ASAP, the locomotive engineer must advise the CLS of locomotive failures, defects, safety hazards or any occasion when a train stalls.

Phone: **1 800 308-6426** or **403 260-5860**
 (or 5861 or 5862)
 Fax: 403-319-6735

1.4 Locomotives may only be operated as follows:

A	On a shop track , locomotives may be operated by;
	<ul style="list-style-type: none"> 1 - certified engine attendant (restricted to confines of the shop track), or 2 - an engine attendant in training under the direction of a certified engine attendant.
B	On all tracks , locomotives may be operated by;
	<ul style="list-style-type: none"> 1 - a qualified locomotive engineer (employee or officer) 2 - a locomotive engineer trainee under the direction of a qualified locomotive engineer instructor, 3 - an operating officer (who is not a qualified locomotive engineer) only when: <ul style="list-style-type: none"> • they are under the immediate direction and control of a qualified locomotive engineer (see note), and • that officer assumes all responsibility for his/her actions, (see note)

- 4 - a non-operating employee or non-employee only when:
 - they are authorized to be on the locomotive (as per CP Access Policy, Section 11.0, Item 4.0), and
 - they are under the immediate direction and control of an operating officer who is a qualified locomotive engineer, and
 - that officer assumes all responsibility for their actions.

Note: "Immediate direction and control," requires the qualified employee remain in the operating cab of locomotive prepared to take control immediately, if required.

2.0 General Instructions

- 2.1 Employees are restricted from opening engine covers and electrical cabinet doors unless authorized, or in the case of emergency.
- 2.2 In case of mishap or fire to locomotives or rail diesel cars, the engines and fuel pumps should be stopped, emergency fuel cutoffs tripped and battery switches opened as soon as possible.
- 2.3 When locomotive consists are in motion, personnel may move from one locomotive to an adjoining locomotive only when both locomotives are equipped with walkways or vestibules. Hinged walkways should be in the raised position, with safety chains in place, on single locomotives or when coupled to other locomotives not equipped with walkways or vestibules.
- 2.4 Operation of the uncoupling lever by an employee standing on the side ladder of control cabs 1100-1104 while in motion, is prohibited.
- 2.5 Locomotives or rail diesel cars must not be stopped over open flame switch heaters unless absolutely unavoidable in which case they should be moved off promptly or switch heaters extinguished.
- 2.6 Within block and interlocking signal systems, should locomotive consists or rail diesel cars be stopped on sand, whether sanders are operated manually or automatically, they must be moved off the sanded rail immediately to ensure proper operation of the signal system. If they cannot be moved, protection as prescribed by CROR Rule 35 must be provided.

15

3.0 Maximum Speed of Locomotive and Rail Diesel Car Consists

3.1 Maximum speed for RDC or a locomotive when operated singly (not coupled to other equipment or another locomotive) is 40 MPH.

3.2 Maximum speed for locomotives as governed by traction motor gearing

Class or locomotive number	MPH
VIA MP27A	100
All Rail Diesel Cars, VIA F40PH	90
VIA GPA-17	89
DRS-12	75
DRF-43, DRF-44, DRF-60	68
DRS-17, DRS-20, DRS-22 DRF-30a, b and g to y 1000 - 1002, 1014, 1018 - 1020, 1022, 1024, 1100 - 1128, 2100 - 2101, 2816 4106 - 4107, 6711	65
1010 - 1013, 1015 - 1016, 1023	41
DS-12, DS-15, DS-17, 1021, 1025 - WHEN OPERATING	35
- WHEN DEAD OR ISOLATED	65
SOO 6000-6041	70
SOO 6042-6062	73
NOTE: <ul style="list-style-type: none"> All Diesel Road Freight (DRF) 6 axle locomotives are restricted to freight train speed on curves. 1100 series locomotives are control cabs - locomotive shells which are used for cab purposes only. In the above chart, DS means Diesel Switcher (4 axle), DRS means Diesel Road Switcher (4 axle), and DRF means Diesel Road Freight (6 axle). 	

4.0 Number of Locomotives in a Basic Consist

4.1 A basic consist is the number of locomotives which may be coupled together, provided current time table permits, and is limited by the number of driving axles as follows:

4.2 Maximum Driving Axles (non 6 axle territory)

Unless authorized by Time Table or Special Instruction, on Service Areas / tracks where 6 axle locomotives are **prohibited** (as indicated in Time Table), the maximum number of driving axles is 16.

4.3 Maximum Driving Axles (6 axle territory)

On Service Areas / tracks where 6 axle locomotives are permitted, the maximum number of driving axles is 24.

When indicated in Time Table / Special Instruction or when operating on the following:

- Main line corridor between Coquitlam / Roberts Bank and connections to the Quebec Gatineau Railway at St. Martin Junction, Parc Sub
- Alyth to South Edmonton
- Dunmore to Kingsgate via Crowsnest
- Fort Steele to Golden
- Weyburn Sub

the maximum number of driving axles is 30.

NOTE: See item 6.0 for additional operating restrictions between Thunder Bay and St. Martin Junction.

NOTE: See Appendix 2 in Section 7 for equivalent driving axle ratings for locomotives.

4.4 Adding Locomotives to the Basic Consist

On 24 or 30 driving axle territory (unless otherwise restricted) dead, isolated or operating locomotives may be added to the basic consist, not to exceed 8 locomotives in total. The following restrictions will apply:

- weight of dead or isolated locomotives must be included in weight of the train;
- total train tonnage (excluding weight of operating locomotives) must not exceed haulage capacity of the basic consist as indicated in 4.5;
- all locomotives must have coupler alignment control/bolster stops.
- as per fuel conservation messages, excess locomotives must be isolated.

Exception: On Distr Pwr Trains, additional Operating Locomotives must not be added to either the lead or remote locomotive consists beyond what is indicated by the instructions in GOI Section 7, item 7.0.

4.5 Maximum Trailing Train Tonnage allowed on Conventional Trains

A	On 24 driving axle territory, determine haulage capacity for 4 SD40 (DRF-30) PTC equipped locomotives. Do not exceed this tonnage even if high horsepower locomotives (e.g. AC4400s, SD60s, SD90MACs) are in the consist.
B	On 30 driving axle territory, determine haulage capacity for 5 SD40 (DRF-30) NON PTC equipped locomotives. Do not exceed this tonnage even if high horsepower locomotives (e.g., AC4400s, SD60s, SD90MACs) are in the consist.
NOTE: When determining haulage capacity, consideration must also be given to train makeup, see APPENDIX 1).	

4.6 Locomotive Restrictions

- A** - Yard Switchers equipped to operate in road service cannot be used in multiple with any other class of locomotive even when equipped with MU features.
- B** - Unless otherwise instructed, if necessary to cut out more than one motor on a GMD 4-motor locomotive, the locomotive must be isolated and moved to specified shop for repair.

5.0 Handling of Locomotives NOT Equipped with Coupler Alignment Control

5.1 CP Locomotives Not Equipped with Coupler Alignment Control

The following locomotives are not equipped with Coupler Alignment Control:

CP Locomotives in series...				
1000	1100	1200	1400	1500
1600	1700	6700	8100	

5.2 Leased Locomotives

Unless otherwise specified, all locomotives leased by CP will be equipped with coupler alignment control.

Note: It may be necessary to move **locomotives owned by industries** that perform their own in-plant switching. These locomotives may be equipped with coupler alignment control, however they must be regarded as **not being so equipped**, and must be marshalled as outlined in item 5.3 below, or item 7.4.

5.3 Except where defined in special instructions, the method for handling this series of locomotives is as follows:

As part of the Lead Locomotive Consist

On CP **no more than one** locomotive in the series listed or other locomotives as instructed by the NMC, are to be moved in a locomotive consist. When such locomotive is part of the lead locomotive consist (single or multiple), it must be marshalled **next behind the lead locomotive**. If marshalled as the second locomotive of a consist with no operating locomotive behind, it must have two loaded cars weighting at least **45 tons** and **less than 65 feet** in length as the first and second cars behind such locomotive.

Without MU Capability or in Train

When this series or type of locomotive is not equipped for multiple locomotive operation due to design, mishap, damage, etc., it must be marshalled in the train and in accordance with item 7.4. The train must be handled as per 7.5.

5.4 Locomotive Engineer Responsibility: In a terminal area the restrictions in item 5.3 do not apply when more than one of these series of locomotives are coupled together in a consist and it is the locomotive engineers responsibility to know before proceeding which locomotives in his care are not equipped with coupler alignment control and to handle the movement avoiding the use of dynamic brake and or independent brake on curves and turnouts.

5.5 Passenger Service: There are no restrictions on the use of locomotives in passenger service which are not equipped with coupler alignment control.

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6.0 Operating Restrictions Between Thunder Bay and St-Martin Jct.

- 6.1** On all trains, which exceed 12, 700 tons, the following restrictions apply in sidings:
- when moving from a stop, use only enough power to start the train moving.
 - avoid increasing the throttle while the locomotive consist is negotiating the siding turnout.
 - this instruction does not apply to Distr Pwr equipped trains.
- 6.2** On all unit trains of loaded bulk commodities, regardless of tonnage handled, the following restrictions apply between Romford and St-Martin Jct.:
- □□□□□□□□ do not exceed 10 MPH on other than main track (except on the siding at Elder on the MacTier Sub).
 - loaded bulk commodity trains should hold the main track at meeting points whenever practicable (e.g., except when meeting time sensitive traffic such as 100 series trains).
 - whenever possible on the Parc Sub, loaded bulk commodity trains should be handled via the North Track.

7.0 Dead or Disabled Locomotives

- 7.1** The appropriate mechanical officer at the originating point must notify the following (in writing) of the movement of disabled locomotives, specifying speed or other restrictions:
- Operations Manager - NMC
 - Multi Yard Process Manager or Designate
 - Central Locomotive Specialist.
- 7.2** The Multi Yard Process Manager or Designate
- must secure authority of the Locomotive Distributor on which train to move the disabled locomotive.
- 7.3** The RTC must notify
- in writing, the conductor and locomotive engineer of any specific train handling required;
 - the connecting service area of the movement and restrictions required.

7.4 Handling dead or disabled locomotives in a train.

A dead, isolated or disabled locomotive, including those listed in item 5.1, which cannot be added to the basic consist, may be handled in the train provided:

A	It is separated from the lead locomotive consist handling the train and from other locomotives marshalled as follows... <ul style="list-style-type: none"> • between at least 4 loaded cars (two on each side) weighting at least 45 tons and less than 65 feet in length. <p>Exception: The requirement to marshall these locomotives between 4 LOADED cars will not apply when there are no loaded cars marshalled to the rear of the locomotives being handled in the train. In this case, 2 loaded (45 ton <65 foot) cars in front and 2 empty cars behind that are less than 65 feet in length may be used. (See Appendix 2 for Marshalling Examples)</p>
B	No more than two locomotives may be marshalled in-train and each locomotive must be marshalled between loads as described in A , unless the exception applies.
C	Locomotive(s) can be at any location in-train and if required to move at the extreme rear of train, must be marshalled as instructed in D .
D	A single locomotive which has a damaged drawbar may be moved at the extreme rear of train providing: <ul style="list-style-type: none"> • the locomotive is dead, with air brakes set for "Dead in Train" • the air brakes are operative • the train is mostly loaded cars (at least 2/3 loads) • there are no large blocks of empty cars (10 or more) marshalled anywhere ahead of the disabled locomotive and the 2 cars immediately ahead of the locomotive, loaded or empty, must be less than 65 feet in length.

Note: Apply GOI Section 7, item 4.2 to determine if a TrAM check is required when lifting a dead, isolated or disabled locomotive.

- 7.5** When dead or disabled locomotives are marshalled in accordance with item 7.4(A):

DYNAMIC BRAKE FACTOR MUST NOT EXCEED 10 AND THE USE OF INDEPENDENT BRAKE ON CURVES MUST BE AVOIDED.

7.6 Handling dead remote locomotive(s) on the extreme rear of a distr pwr train, (Brake Cylinder pressure failure)

In the event Tail End Remote(s) shutdown enroute and cannot be restarted, arrangements must be made with the NMC to conventionalize or re-marshall the train at the first available location. The train may proceed to an alternate location, providing **all** of the following conditions are met.

- Must still have communication between the lead and remote.
- Remote unit must be in the Isolate mode with the remote feed valve cut out.
- Main Reservoir pressure on the remote must be 85 PSI or greater.
- Must pass a TrAM check.

Note: During freezing weather arrange to drain the locomotive as per GOI Section 15 Item 11.0.

Note: Locomotive Engineer must monitor the main reservoir on the remote. If the MR pressure drops below 85 PSI and/or communication is lost^(*) with the remote, then train speed must be reduced to 25 MPH and only proceed to the first available location and be conventionalized or remote(s) replaced.

* This does not include intermittent comm loss that is experienced with normal operations.

CAUTION: If main reservoir pressure has depleted, the brakes will be inoperative on the remote, even if the brake pipe is reduced or the unit is placed into emergency!

7.7 New Locomotives (North American Models) Moving from EMD Factory in London, Ontario to USA or other points.

NOTE: These locomotives are usually brand new and usually leave the factory unpainted.

A	In the application of GOI Section 13, item 16.5, step 2, these locomotives will be handled trailing in the lead locomotive consist, DEAD and with only the brake pipe coupled. This above information must be recorded on the Crew to Crew Form.
B	The locomotives have operative air brakes and should be tested in accordance with train air brake tests (automatic brake application and release only).
	Note: EMD personnel will set up the air brake system properly and will ensure all controls and switches are properly positioned; locomotive cab doors will be subsequently locked. CP employees must not alter any controls or switches on these locomotives unless so advised by the central locomotive specialists.
C	The locomotives will be handled in standard freight service.
D	The total number of these locomotives plus the operating locomotives must not exceed 8 (as per GOI sec 15, item 4.4).
E	WARNING! Wheelslip protection will NOT be available for these locomotives. It is mandatory that train crew members make frequent running inspections on both sides of the locomotive consist to ensure that all wheels are turning freely.
F	Any time one of these locomotives is set off and left standing, apply a hand brake and test its effectiveness. It will not be possible to re-position the air brake handles and valves as per GOI Section 14, item 5.0 b) and d).
G	Should difficulty be experienced with one or more of these locomotives during transit, or should one of these locomotives need to be picked up or set out in route, crews must immediately notify the Central Locomotive Specialists located in Calgary.
H	Special Instructions will be issued for EMD passenger locomotives and for EMD export locomotives destined for railroads outside North America which may not be equipped with alignment control couplers. All new EMD freight locomotives built for North America are equipped with alignment control couplers.

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8.0 Pre-Departure Locomotive Inspections

8.1 Locomotive Safety Inspection Locations

NOTE: The Schedule B brake test form has been revised to include information regarding a locomotive safety inspection, locomotive defects, and dynamic brake (DB) factors. Other methods may also be used to convey this information.

At locations where a locomotive safety inspection has been performed by mechanical services personnel, the locomotive engineer must be notified verbally or in writing that:

- 1 - the inspection was completed, and
- 2 - the nature of any safety defects when a locomotive is being moved for repair, and
- 3 - to ensure safety of movement, any restrictions.

Before departing, the locomotive engineer must:

A	Record any safety defects on the Crew to Crew Form.
B	Know that the DB factor does not exceed the maximum permissible limit, and record the DB factor on the Crew to Crew Form.
C	Ensure that the headlights, ditchlights, bell and whistle are working on the lead locomotive.
D	Know that the flagging equipment is fully supplied on the lead locomotive.
E	Ensure that the hand brakes are released. NOTE: If the locomotive consist does not roll freely when movement is commenced, stop and check hand brakes on all locomotives.
F	Unless advised verbally or in writing (Schedule B) that a locomotive brake test was previously completed at that location, perform a locomotive brake test in accordance with GOI Section 13, Item 2.0.
G	Unless advised verbally or in writing that a locomotive safety inspection was previously completed at that location, perform a locomotive pre-departure inspection in accordance with Item 8.2. NOTE: At safety inspection locations where remote locomotive(s) are to be added to a train or a rear end remote is set up for lead position (switching ends), the remote locomotive(s) must receive a safety inspection.

8.2 Locations Other than Locomotive Safety Inspection Locations

At locations where a locomotive(s) has laid over more than eight hours without a safety inspection, prior to departing, the locomotive engineer or other qualified person must perform a locomotive pre-departure inspection as follows:

A	start up the engines, if shutdown.
B	inspect the running gear and trucks for visible defects.
C	inspect the locomotive(s) for any other apparent hazards likely to cause an accident or injury.
D	where applicable, the Automatic Reporting Unit (ARU) must be disconnected. (Refer also to item 10.4.)
E	record any defects on the Crew to Crew Form.
F	know that the DB factor does not exceed the maximum permissible limit and record the DB factor on the Crew to Crew Form.
G	know that the air brake system is set up correctly for lead and trailing locomotives.
H	ensure that the headlights, ditchlights, bell and whistle are working on the lead locomotive. Locomotives with one or more of these defects may depart only when authorized by the Director Operations - NMC. In the application of CROR Rule 19, the designated repair points for ditch lights are: Coquitlam, Calgary, Winnipeg, Toronto and Montreal.
I	know that the flagging equipment is fully supplied on the lead locomotive.
J	ensure that the hand brakes are released on all locomotives.
K	perform a locomotive brake test in accordance with GOI Section 13, Item 2.0.

NOTES:

- At other than safety inspection locations where remote locomotive(s) are added to a train, the remote locomotive(s) must receive a pre-departure inspection.
- Where remote locomotive(s) have already been added to a train but the train lays over more than 8 hours, no pre-departure inspection is required.
- When a rear end remote locomotive is set up to operate in the lead position (switching ends), that locomotive must receive a pre-departure inspection at that time.

8.3 Changing Off with Another Locomotive Engineer

A	Examine the Crew to Crew Form. If the form does not clearly indicate that the DB factor is within permissible limits, check each locomotive and then update the Crew to Crew Form.
	NOTE: Normally a remote consist will not include enough locomotives to exceed the maximum permissible DB factor, so a personal check is not required
B	know that the flagging equipment is fully supplied on the lead locomotive.

8.4 USA Destined Locomotives

A	Each locomotive that is destined to or in service in the USA shall be inspected at least once during each calendar day (24 hour period from midnight to midnight).
B	This inspection may be either a mechanical safety inspection or a pre-departure inspection by the locomotive engineer.
C	In addition to the minimum pre-departure inspection requirements provided in Item 8.2, the engineer must ensure that an FRA Form F6180-49A (blue card) is displayed in the cab.
D	A written report of the inspection, using Form 2068 Daily Inspection Report, or equivalent, must be completed and filed with mechanical.
E	A record shall be maintained on the locomotive showing the place, date and time of the most recent inspection.
F	If any safety defects are identified during an inspection or that develop while enroute, the engineer must complete a Non-Complying Tag (Form 2067), or equivalent, attaching one copy to the isolation switch on the defective locomotive and one copy on the control stand of the controlling locomotive.
G	The Non-Complying tag shall include the following information: <ul style="list-style-type: none"> - The words "Non-complying locomotive" - Locomotive initials and number - Nature of defect - Movement restrictions, if any - Destination - Name of the railway company and name of employee completing the tag.
H	All non-complying conditions must also be reported to the Central Locomotive Specialist (diesel doctor) or other mechanical supervisor, as soon as possible.

9.0 Movements Not Controlled by the Lead Locomotive, Pilots

A	Except for snowplows, cab cars on commuter trains or other similar passenger equipment, movements not headed by the controlling locomotive must not exceed 25 MPH, unless otherwise specified by CROR Rule 115.
B	If a locomotive is not equipped with a pilot in the direction of movement, that movement is restricted to 20 MPH. Note: <ul style="list-style-type: none"> • All "DRF" (Diesel Road Freight) locomotives have a pilot on the front end only, the rear has an end plate. • All "DRS" (Diesel Road Switcher) locomotives have a pilot at both ends. • The "pilot" can be either the standard CP curved pilot or a snow plow type.
D	A sperry car moving backwards is restricted to 25 MPH.

10.0 Winter Operation: Leaving Locomotives Unattended - (Nov 15 - Mar 15)

10.1 High Idle Protection:

Most CP locomotives GE, SD40-2 and SOO 6000 to 6062 (SD60's) have been equipped with high idle feature which will automatically increase engine RPM if cooling water temperature drops below a certain point.

However this feature is not trainlined.

Locomotives not equipped with this feature have to be throttled up manually (from the controlling locomotive).

10.2 Locomotives that may NOT be Equipped:

Leased Units, Yard Engines, low horse power road switchers and most SOO and former SOO locomotives are NOT equipped with High Idle protection.

Many StL&H, D&H, DM&E and ICE locomotives may NOT be equipped with high idle protection.

Note: If in doubt, the locomotive(s) should be manually throttled up as per the policy below.

10.3 Policy:

IF...
Temperatures are at, or expected to drop below minus 20° Celsius (- 20°C) and
any locomotive in the consist that may not be equipped with high idle protection and
such locomotives are being left unattended,
THEN...
manually throttle up the consist as follows: On Leading locomotive ensure:
1 - Generator Field switch is OFF.
2 - Control/Fuel Pump & Engine Run switches are ON.
3 - REVERSER is inserted and in NEUTRAL.
4 - Throttle is in #4 position.
Note: Locomotives equipped with the High Idle feature should be ISOLATED so that they do not rev up unnecessarily. This should be noted on the Crew to Crew Form.
It is recognized that train crews do not have easy access to the exact outside temperature. Care and good judgment are essential tools in the application of this instruction.

10.4 Automatic Reporting Units (ARU)

A	In areas where locomotives are connected to an ARU, do not increase the throttle to notch 4 unless so advised by maintenance personnel.
B	All unattended locomotive consists which are tied up at locations where an ARU is located or a portable ARU is used at a remote location, must have the ARU connected as per local operating instructions or as per instructions posted at the ARU or within the portable unit.
C	ARU & DISTR PWR - When leaving DISTR PWR consists at a location where an ARU is to be used, the remote unit(s) must have a MU cable connecting it to the lead consist. This will allow any alarms on the remote unit to be relayed to the lead unit and the ARU. This information must be recorded on the Crew to Crew Form.
D	CAUTION: Before moving the locomotive(s), check to ensure ARU cable is unplugged:
1	On DISTR PWR consists, the MU cable between the master (lead) consist and the remote consist(s) MUST be disconnected prior to the movement of the locomotives.
2	Store the ARU in the designated area to avoid possible damage to equipment/components. Crews are responsible to ensure that portable ARU's are with the consist prior to leaving the initial location as well as the remote location.

NOTE: If the reverser is placed in a direction before the ARU is unplugged, the locomotive wheel slip alarm will activate.

E	If responding to an alarm from an ARU:
1	Find and correct fault and restart if shut down.
2	Ensure locomotive(s) is running in idle. Check isolation switch to ensure it is in RUN position.
3	Ensure the ARU plug is correctly set into the MU receptacle on the locomotive.

11.0 Draining A Locomotive In Freezing Weather

Note: UP 8500 – 8561 (SD90MACs) are equipped with anti-freeze in the cooling system and must not be drained.

11.1 Winter Operation (Nov 15 - Mar 15) - Draining Locomotives.

Winter Operation	<p>During winter operations (Nov 15 - Mar 15),</p> <p>1 - IF any engine dies and cannot be restarted, THEN the cooling system MUST be drained using the manual drain valve.</p> <p>2 - IF a LEASED locomotive is trailing and</p> <ul style="list-style-type: none"> - it has to be left ISOLATED and - it is not equipped with an Alarm Silence Switch THEN the cooling system MUST be drained using the manual drain valve: <p>CAUTION: refer to item 11.2 below.</p>
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Silent Alarm Circuit	<p>CP locomotives are equipped with an Alarm Silence Switch so even when isolated will “sound the alarm” if the engine shuts down</p> <p>About one half of leased locomotives do not have this feature and if ISOLATED, will NOT “sound the alarm” if the engine shuts down.</p>
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Automatic Drain Valve	Do not rely on automatic drain valves. When a crew member responds to an alarm, the cooling water temperature may still be warm enough to prevent the valve from opening. When it is cool enough, no one will be present to confirm that the valve opens automatically and if it doesn't, serious damage is likely.
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11.2 When the engine of a locomotive is shutdown and there is a possibility of damage from freezing, the engine cooling water must be drained.

Refer to the draining instruction posted in the cab. If in doubt, contact the locomotive Specialist for instructions.

PRECAUTIONS	
A	<i>When it is necessary to drain the coolant from a locomotive, ensure the drain pipe or pressure relief outlet is not pointed at you.</i>
B	If the locomotive is not equipped with a pressure relief valve on the expansion tank and it is required to remove filler pressure cap, ensure that coolant temperature gauge indicates that coolant temperature is normal or cold prior to attempting to remove the filler cap.
C	Stay clear of the filler pipe connector when releasing pressure. Once the pressure is vented, carefully remove filler pressure cap.
D	Any former SOO, D&H, foreign and leased locomotives not equipped with an Alarm Silence Switch that for any reason are required to be ISOLATED when trailing in a consist must be shut down and drained during freezing weather.
E	Care should be taken as to where cooling water containing compound is drained.

11.3 Locomotive Water Cooling Systems

There are many different types of water cooling systems on locomotives. Water fill instructions are located in the locomotive cab or at the water filling station on the locomotive. If in doubt as to the procedure or if the instructions are missing, contact the Locomotive Specialist and be governed by their instructions.

Note: For GE locomotives, an illustrated **Job Aid** is available on **RailCity** (*Teams – Operations – Safety & Environmental Services*) for proper water level and fill procedures for GE locomotives.

Water Filling Precautions	
1	Allow the locomotive to Idle for at least 10 minutes to allow water to drain from Radiators into the tank.
2	When possible always use the water fill pipe connection (Chicago Coupler) at the side of the expansion tank.
3	Open the spring loaded water fill valve to relieve pressure before (at least <i>60 seconds</i>) and during filling. This valve is on the top, forward side of the expansion tank.
4	If required to open the expansion tank (radiator) cap, Do not open the cap unless you have pulled down the Vent Valve handle for at least <i>60 Seconds</i> to prevent injury.
5	On GE Locomotives, ensure the green light located at the water fill location on the locomotive is "ON" before filling or removing radiator cap.
6	On some GE locomotive a radiator cap cover has been installed to prevent removing the radiator cap. DO NOT REMOVE THIS COVER unless authorized by the Locomotive Specialist.
7	Add water until the level reaches the " Full At Idle " mark on the sight glass. Do not overfill!
8	Once proper level is achieved, turn water supply off immediately to avoid over-filling, then release the spring-loaded water fill valve so valve returns to it's closed position.
9	If the water level needs to be lowered, open the water drain valve located below the water tank and drain to the correct level.
10	When draining water, it will drain under the platform, ensure no one is near the drain pipe.

11.4 GE AC Locomotives - Drain Valve Circuit Breaker

The drain valve circuit breaker on the engine control panel is to remain ON at all times.

12.0 Causes of a PCS Operation (Pneumatic Control or Power Cut-off Switch)

NOTE: In the following instructions, PCS also refers to PC or Power Cut-Off lights.

The following will cause the PCS switch to operate:

A	An emergency brake application.
B	A penalty brake application caused by: <ul style="list-style-type: none"> - a timing out of the reset safety control (RSC), - the safety control foot pedal being released, or - exceeding the maximum speed of the locomotive.

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13.0 Recovering a PCS Following a Penalty Brake Application

1	Place the independent brake handle in FULL application.
2	Place the throttle/dynamic brake handle(s) in IDLE/OFF.
3	On a locomotive equipped, depress the safety control foot pedal.
4	Place the AB handle in SUPPRESSION (or LAP for No 6 and 24 equipment)
5	On a locomotive equipped with a safety control foot pedal, wait for the PCS light to extinguish.
6	On a RSC equipped locomotive, operate any system reset and wait for brake pipe exhaust to cease, or the PCS light to extinguish.
7	Return the AB handle to RELEASE (or RUNNING for No 6 and 24 equipment).

WARNING - PCS RECOVERY
(GM & GE Locomotives)

The throttle and dynamic brake handle MUST NOT be moved from the IDLE position before attempting an automatic brake release. Following the release, ensure brake pipe pressure is being recharged AND the PCS light is out.

NOTE: On some locomotives, after the exhaust ceases, the PCS light will not extinguish until the AB handle is returned to the RELEASE or RUNNING position.

14.0 Recovering a PCS Following an Emergency Brake Application

1	Place the independent brake handle in FULL application.
2	Place the throttle/dynamic brake handle(s) in IDLE/OFF.
4	Place the AB handle in EMERGENCY (or LAP for No 6 and 24 equipment)
5	Wait 60 seconds AND on locomotives equipped with an electronic display screen, ensure reset message appears or the fault disappears.
6	Return AB handle to RELEASE, pausing briefly in HANDLE OFF and SUPPRESSION; (on No 6 or 24 equipment, return AB handle to RUNNING position).

WARNING - PCS RECOVERY (GM & GE Units)

The throttle and dynamic brake handle MUST NOT be moved from the IDLE position before attempting an automatic brake release. Following the release, ensure brake pipe pressure is being recharged AND the PCS light is out.

14.2 PCS Recovery/TIBS Failure

The TIBS is known to be defective and it is necessary to recover the PCS while standing on a grade, and

IF the state of charge of the brake pipe cannot be determined or is in doubt, and

IF the locomotive brakes are not sufficient to prevent train movement,

THEN a sufficient number of retainers and/or hand brakes must be applied to hold the train standing, before releasing the automatic brake.

14.3 Emergency Brake Application Recovery Procedure when Moving from a Stop - Retainers/Handbrakes

A	Refer to: <ul style="list-style-type: none"> GOI Section 16 Appendix 1, Descending Heavy Grade Job Aid, item 6.0, "Use of Retaining Valves," or Time Table footnotes regarding mandatory use of retainers or handbrakes. See also GOI Section 15, item 29.3.
B	When hand brakes are used, they must be released before moving the train, but only after the train air brake system is fully charged.
C	When High Pressure (HP) retainers are used, the train must not exceed 20 MPH. The train must be stopped every 20 minutes for a period of 10 minutes in order to allow the wheel and brake shoes time to cool off.

15.0 Changing Operating Cab of a Multiple Locomotive Consist

Note: ensure that the locomotive is protected from unintended movement.

15.1 At the cab being cut-out (to set up for TRAILING locomotive).

1	Place <ul style="list-style-type: none"> the throttle in IDLE the selector handle in OFF (if applicable) and remove the reverser handle.
2	Place the independent brake handle in FULL application.
3	<p>1 - Make a full service reduction.</p> <ul style="list-style-type: none"> Cut-out the automatic brake. Move the automatic brake handle to HANDLE OFF and remove the handle, if removable. <p>2 - With No. 6 and 24 equipment</p> <ul style="list-style-type: none"> Make a full service reduction and move the brake handle to LAP.

	<ul style="list-style-type: none"> Close the brake valve cut-out or double heading cock. Move the automatic brake handle to RUNNING and remove the handle, if removable.
4	Place the MU-2-A valve or electronic equivalent in TRAIL position. With No. 6 and 24 equipment, place the Rotair valve in FREIGHT LAP or PASS LAP as required.
5	Place the independent brake handle in RELEASE and remove the handle if removable. Note: Brake cylinder pressure is not maintained when the independent brake is cut-out. Observe brake cylinder pressure for leakage, and if necessary apply hand brake(s).
6	At the control stand, ensure the Generator Field switch is OFF. Leave the Control/Fuel Pump and Engine Run switches ON until after having set up the controls on the locomotive being cut in as the controlling locomotive. Note: On AC4400 locomotives, ensure the dynamic brake circuit breaker on the control stand is OFF.
6	Return AB handle to RELEASE, pausing briefly in HANDLE OFF and SUPPRESSION; (on No 6 or 24 equipment, return AB handle to RUNNING position).

15.2 At the cab being cut in (to set up for LEAD).

1	Replace the handles to the automatic and independent brake, and move the independent brake handle to FULL application.
2	Place the MU-2A valve or electronic equivalent in LEAD. With No. 6 or 24 equipment, move the Rotair valve to FRT or PASS as required.
3	Move the automatic brake handle to RELEASE. With No. 6 or 24 equipment move automatic brake handle to RUNNING. If necessary adjust Equalizing Reservoir Pressure.
4	Cut-IN the automatic brake. For No. 6 or 24 brake equipment, open the brake valve cut-out or double heading cock.
5	At the control stand, ensure the Control/Fuel Pump, and Engine Run switches are ON. Note: On AC4400 locomotives ensure the dynamic brake circuit breaker on the control stand is ON.
6	Return to the cab of the locomotive being cut out, place the Control/Fuel Pump and Engine Run switches to OFF.
7	Perform a Locomotive Air Brake test.

16.0 Joining a Locomotive Consist

1	Couple the locomotives and STRETCH to ensure that the couplers are locked.
2	On the controlling locomotive, apply the independent brake FULLY.
3	Before coupling the air hoses, open the cocks enough to blow out any accumulation of dirt or snow from the hose couplings. Check the air hose gaskets.
4	Ensure that all air hoses are properly connected, and that the air line cocks are open.
5	Ensure that the jumper cables are properly connected and secured in the captain hook, or other securing device.
6	Ensure that the controls and switches are properly positioned on all locomotives in the consist. (e.g. for lead or trailing).
7	Release the hand brakes where applied.
8	Perform the required air brake test.
Note: Ensure that any locomotive(s) to be left standing is properly secured with hand brakes and in accordance with GOI Section 14, Item 4.0.	

17.0 Starting/Stopping the Diesel Engine - Battery Knife Switch

CAUTION: Electrical arcing may occur when opening or closing the main battery knife switch.

- do not wear dangling accessories, jewelry or other similar items likely to come in contact with the bare metal parts of the switch
- grasp the battery knife switch by the handle only
- avoid direct contact with the bare metal bars and bare metal surfaces of the battery knife switch

17.1 ZTR Smart-Start or Q-Tron QEG or GE Auto Engine Start/Stop (AESS)

If a diesel engine has been shut-down by ZTR Smart-Start or Q-Tron QEG or GE Auto Engine Stop/Start System (AESS), it can be re-started as follows:

- insert reverser and move to Forward or Reverse
- some locomotives (GP7s, GP9s and GEs) may also require Generator Field switch moved to the ON position.

18.0 Starting/Stopping the Diesel Engine - GMs and GEs

18.1 GM Locomotives – Starting

	Description	Action
1	Lube oil, cooling water, compressor oil	Check
2	On control stand:	
	Engine Run switch	ON
	Generator Field switch	OFF
	Control/Fuel Pump switch	ON
	Throttle	IDLE
	Reverser handle	CENTERED
	MU Engine Shutdown (if equipped)	RUN
3	SD90MACs ensure:	
	CONTROL circuit breaker (C Brk)	OFF
	COMPUTER CONTROL C Brk	OFF
4	Main Battery Knife Switch	CLOSE
5	On SD90MACs in the following order:	
	FUEL INJECTION SWITCH (on #2 C Brk Panel)	START/RUN
	C Brks in black and yellow striped zone	ON
	COMPUTER CONTROL C Brk	ON
	CONTROL C Brk	ON
	WAIT FOR 2 MINUTES TO ALLOW COMPUTER POWER UP	
6	Isolation switch	START/STOP/ ISOLATE
7	Alarm Silence Switch (if equipped)	ON
8	On DC traction locomotives, at start station:	
	governor low oil button (if equipped).	Reset if tripped
	engine overspeed lever (if equipped).	Reset if tripped
	Fuel Prime/Engine Start switch (if equipped)	PRIME (until return fuel sight glass is full and free of Bubbles)
	Fuel Prime/Engine Start switch (if required).	(20 seconds maximum)
	Layshaft (if equipped)	move to 1/3 of full travel (until engine starts)
	CAUTION: Do NOT use layshaft on engines equipped with Q-TRON Electronic Governor (QEG).	
	Low Water protective device (within 1 minute of starting)	RESET
9	On SD90MACs, in the locomotive cab on Engine Control Panel:	
	Engine Start	Press for 2 Seconds and Release

	Note: An alarm will sound for 5 seconds prior to start-up. If the engine fails to start, the computer will display a fault message on the left operator screen.
10	If engine fails to start within 20 seconds, re-check steps 1 - 9, allow at least 2 minutes between attempts (for starting motors to cool or computers to reboot) and try starting again.

18.2GM locomotives - Shutting Down

Note: On GM locomotives equipped with a turbocharger, ensure the engine has been in throttle 4 or lower for at least 15 minutes before shutting the engine down.

	Description	Action
1	Ensure that the locomotive is protected from unintended movement.	
2	On control stand:	
	Throttle	IDLE
	Selector handle (if applicable)	OFF
	Reverser handle	REMOVED
3	Isolation switch	ISOLATE
4	Emergency Fuel Cutoff Switch (EFCO)	PRESS to shutdown the engine.
	On SD90MACs:	
	COMPUTER CONTROL Circuit Brk.	leave ON
	All C Brks protected by shield (e.g. TURBO etc.)	leave ON
	All other Circuit Brks	OFF
5	Main Battery Knife Switch	OPEN
6	Doors and Windows	CLOSED
7	At diesel facilities, advise shop planner locomotive #, and shutdown date and time.	

15

18.3 GE AC4400 Locomotives - Starting

	Description	Action
1	Lube oil, cooling water, compressor oil	Check
2	On control stand:	
	Engine Run C Brk	ON
	Generator Field C Brk	OFF
	Control Circuit Brk	ON
	Throttle	IDLE
	Reverser handle	CENTERED
	MU Engine Shutdown (on overhead console).	RUN
3	Engine Control (EC) switch	START
4	Main Battery Knife Switch	CLOSE
5	Engine Control Panel:	
	Drain Valve C Brk.	ON
	TOP ROW C Brks	
	• TRAILING unit	OFF
	• LEAD unit	ON/OFF as required
	LOWER ROW C Brks: LEAD & TRAILING units.	ON
6	Miscellaneous:	
	DID panel	Check for Fault Messages
	Alternator Field (BFCO) switch	NORMAL
	NOTE: The BFCO switch is in center electrical cabinet near top.	
	Traction motors # 4 and # 5	Cut-IN
	Barrier Bar (in Auxiliary Cab doorway)	DOWN
7	At start station:	
	Fuel Prime/Engine Start switch.	PRIME (until fuel sight glass is full and free of bubbles and ensure fuel pressure gauge reads 55 psi)
	Fuel Prime/Engine Start switch	ENGINE START
	Note: There will be a 5 to 40 second delay before engine begins to crank.	
	If engine fails to start within 20 seconds cranking re-check steps 1 - 6, and try starting again.	
8	Lubricating oil pressure gauge	CHECK for proper pressure

18.4 GE AC4400s Locomotives - Shutting Down:

Note: Ensure the engine has been in IDLE for at least 5 minutes before shutting the engine down.

	Description	Action
1	Ensure that the locomotive is protected from unintended movement.	
2	Throttle	IDLE
3	Reverser handle	REMOVED
4	Engine Control (EC) switch	START position
5	Engine STOP push button	PRESS to shutdown the engine
6	Circuit Breakers:	
	Water Drain C Brk	leave ON
	All C Brks protected by shield	leave ON
	All other C Brks	OFF
7	Main Battery Knife Switch	OPEN
8	Doors and Windows	CLOSED
9	At diesel facilities, advise shop planner locomotive #, and shutdown date and time.	

19.0 Engine Shutdown Account Crankcase Overpressure

Certain conditions can cause a severe build-up of dangerous gases within the engine crankcase. GM and GE engines are protected in different ways and therefore respond differently.

GM Engines:

If the crankcase pressure button trips (pops out), DO NOT attempt to restart the engine. Explosive gases in the crankcase could be ignited and cause injury.

GE Engines:

1 Low levels of overpressure:
 GE engines, when crankcase overpressure is sensed, the computer will return the engine to idle speed for low levels of overpressure, but will not shut the engine down for this indication alone. The DID panel on the back cab wall will indicate "7A7F SHUTDOWN: Crankcase Overpressure."
 When this occurs, **isolate** the locomotive and **do not reset** any such indication.
 If an engine with a 7A7F fault displayed will be left unattended for more than one hour, or any abnormal engine noise or condition becomes apparent at idle, the engine **must** be shutdown manually, and **must not** be restarted.

2 High levels of overpressure:
 Will be indicated on the DID panel by "7A80 SHUTDOWN: Crankcase Overpressure," and the engine should shutdown automatically and **must not** be restarted.
 When this occurs, isolate the locomotive and **do not reset** any such indication.

Summary:
 Any engine shutdown (GM or GE) account excessive crankcase pressure **must** be left shutdown until inspected by qualified mechanical personnel.
 Report defect to the Central Locomotive Specialist and book on the Crew to Crew Form.
 Arrangements will then be made for Mechanical Services to perform a thorough inspection of the engine crankcase, and repair as necessary.

20.0 Locomotive Stop Start Systems

20.1 All Stop Start Systems must be operational on a year round basis. Do not disable or override these systems except as provided below.

20.2 There are 3 types of systems on CP:

A	ZTR Smartstart System
B	QEG 1000 (Q-tron Electronic Governor) QEG also increases tractive effort, improves traction motor cooling in Dynamic Brake and improves fuel economy.
C	AESS - GE AC's have a system called "Auto Engine StopStart System (AESS)".

20.3 Switches and Circuit Breakers (C Brk):

A - ZTR System	
Autostart Circuit Breaker	Is a single pole breaker located in Circuit Breaker panel or electrical cabinet (there is no label applied to help identify this C Brk).
• ON	normal position
• OFF	when performing maintenance or when manually shutting down

B - QEG 1000 System	
QEG 1000 C Brk	located on C Brk panel
• ON	normal position
• OFF	when performing maintenance or when manually shutting down

GP 38 Locomotives only	
Autostart Disable Switch	located on engine control panel
AUTOSTART ENABLED	must be in this position in order for locomotive to load
LEAD UNIT DISABLED	will prevent auto shutdown on lead locomotive only

WARNING	
IF	THEN
<ul style="list-style-type: none"> the lead locomotive is a GP 38 series and an automatic brake application is being used to hold a train standing 	the start stop system must be disabled to prevent lead unit shutdown. This is to maintain main reservoir pressure. Failure to comply with this instruction may result in a undesired release of the train air brakes if one of these locomotives (GP38s) had shut down and then automatically restarted.

15

C - GE AC4400s/AESS	
Disable Toggle Switch	located behind DID panel:
• ON	must be in this position in order for locomotive to load.
• OFF	when performing maintenance or when manually shutting down.

- 20.4** If a stop start system did not shut down the engine, it will not re-start the engine; manual re-start is required (e.g., place the isolation switch in START/STOP/ISOLATE position and re-start as per normal procedure).
- 20.5** SHUTDOWN: With systems enabled and with engine oil and water at certain temperatures, throttle in IDLE, reverser CENTERED, independent brake applied, ambient temperature above 0°C (5°C on GE's) auto shutdown will occur:
- 10 minutes after loading on GE's
 - 20 minutes after loading on QEG/ZTR system
- 20.6** RE-START: If a stop start system did shut down the engine, the system will re-start the engine automatically. With systems enabled, and throttle in IDLE, any one of the following will cause automatic re-start to occur:
- Coolant temperature falls below 37°C (100°F)
 - Ambient temperature falls below -2°C (5°C on GE's)
 - Battery voltage falls below 63 Volts
 - Reverser: moved to FORWARD / REVERSE (on some GP9s, GF switch must be ON)
 - Locomotive brake cylinder pressure falls below certain levels
 - Main reservoir pressure falls below 100 psi (not on GP38 & GP9 series locomotives)

Exception: On SD40 and GE AC Locomotives, Main Reservoir, Brake Pipe & Brake Cylinder pressures are not monitored if the locomotive Start/Stop (ECS) switch is in the ISOLATE position.

On distributed power trains, the remote(s) must be left in the Isolate Mode to prevent the remote(s) from trying to maintain brake pipe pressure.

Warning: It is important to ensure that locomotives and/or trains are properly secured and tested, as it is expected that M/R, B/P and B/C pressures will eventually leak off.

If air is required to be maintained on the train, the Start/Stop (ECS) switch may be left in the RUN position. The Stop / Start system will still operate, however the main reservoir pressure will prompt a restart of the locomotive

20.7 IMPORTANT – Stopped on a descending or ascending grade?

GE locomotives with operational AESS will shutdown 10 to 30 minutes after loading and other locomotives may shutdown after 20 minutes.

You may not be aware that a trailing or remote locomotive has been automatically shutdown.

To begin auto re-start of the locomotives

- ensure Generator Field is ON
- select Forward or Reverse

Before releasing the brakes and attempting to move the train, wait 2 ½ minutes. It will take this long for the locomotive(s) to be re-started and then provide traction or dynamic brake.

If the procedures above do not restart the locomotive(s), secure the train, if locomotive brakes are insufficient to hold the train. Make an Emergency Brake application. This should cause the shut down locomotives / remotes to restart. Recover the brake as per Section 17 Item 17.0.

21.0 Operating over Railway Crossings at Grade

Before passing over Railway crossings at grade, the throttle must be reduced to No. 4 position or lower at least eight seconds before reaching the crossing. If speed is less than 25 MPH and throttle is in No. 4 position or lower, the throttle must be reduced one position, adhering to the same eight second interval. This procedure is necessary, to ensure reduction of motor and generator voltage to a safe level, to prevent damage to electrical equipment from flashovers.

Note: This instruction does not apply to AC traction motor equipped locomotives.

22.0 Operating Through Water

Locomotives should not be operated through water of a depth of more than three inches above the rail. They may be operated through water if the depth is three inches or less above the top of the rail, but at a speed not exceeding three miles per hour. Should it be necessary for a locomotive to operate through water above rail level the following should be done:

- | | |
|----------|--|
| 1 | Place the throttle in idle and reduce the speed as quickly as possible. |
| 2 | Place the generator field switch in OFF and advance throttle to notch 4 to increase the volume of air supplied by the traction motor blowers to prevent water from entering the traction motors. |

15

3	After passing through the water, resume power with caution and watch for any abnormal operation. If locomotive operates normally (no ground relay, etc), it may be considered safe to proceed.
4	If the motors are flooded, power should not be reapplied.
5	Whether water has affected the motors or not, the occurrence must be reported to the CLS and noted on the Crew to Crew Form.

23.0 Rail Diesel Cars (RDC)

Refer to VIA Rail operating instructions in regard to troubleshooting RDC.

24.0 Locomotive Load Meter

Note: AC traction locomotives are not subject to short time ratings or traction motor stall burn.

24.1 Short Time Ratings

1	Unless the locomotive is isolated, Locomotive Engineers should observe the load meter, but particularly so when under slow speed full throttle conditions.	
2	If the load meter enters the short time current rating, or if an AC locomotive is controlling in a consist with DC locomotives trailing, the rating table must not be exceeded in order to avoid traction motor damage.	
	Speed	Rating
	11 MPH	continuous
	10.5 MPH	60 minutes
	10 MPH	30 minutes
	9 MPH	15 minutes
	8 MPH	10 minutes
	5 MPH	5 minutes

24.2 If the load meter enters the short time current rating, to avoid traction motor damage, the short time rating must not be exceeded.

24.3 It should be understood that the different short time rating zones are not to be considered as consecutive ratings.

For example: The locomotive must not under any circumstances be operated at the ¼ hr rating for ¼ hr, then at the ½ hr rating for ½ hr, then at the 1 hr rating for 1 hr.

24.4 If operating in the short time rating zone, but the load is then reduced such that the load meter falls below the short time rating zone for less than 20 minutes, and then the pointer re-enters the short time rating zone, the time operating in

the short time rating zones must be added together. Do not exceed the time indicated by the most restrictive zone reached by the load meter.

24.5 Should it appear that the short time rating will be exceeded, the RTC must be advised and the train crew shall take the necessary corrective action by either,

A - Stopping the movement and cooling the traction motors for 20 minutes by centering the reverser, place the GF switch OFF and advance the throttle to No. 4 position, or

B - stopping the movement and either reducing or doubling the grade.

24.6 In addition, to avoid traction motor damage, DO NOT power up the locomotive to hold a train at a stand still on a grade OR allow the locomotive to stand without movement for more than 10 seconds after the throttle is opened.

25.0 Locomotive Speed Indicators

25.1 Locomotive engineers must verify that speed indicators are in working order when leaving a shop track.

25.2 The speed indicator must be checked for accuracy, as soon as possible after leaving a terminal. This check must be made before reaching maximum speed and again after maximum speed is reached, and thereafter as often as may be required. When speed indicator inaccuracy is observed, speed must be adjusted accordingly and the exception noted on a Crew to Crew Form.

25.3 In the event the speed indicator on a controlling locomotive fails enroute, the locomotive engineer will advise the RTC accordingly. Arrangements will be made so that the controlling locomotive leaving the next scheduled crew change location will have an operative speed indicator.

26.0 Locomotive Event Recorders & Cameras

26.1 Locomotive Event Recorders are installed to record the following data:

Locomotive number	Time/Date
Speed	Distance and Direction
Acceleration / Deceleration	RSC system operation
Throttle position	Dynamic Brake position
Tractive Effort	Wheel Slip
Brake pipe pressure	Brake cylinder pressure
End of train (EOT) messages	End of train pressure
Equalizing Reservoir	Independent Bail
Horn	Bell
Headlight Operation	Ditchlight Operation
RSC override operation	RSC system failure
Locomotive overspeed	ECP Messages (if equipped)
Emergency Brake Application – Lead Loco	
Emergency Brake Application – Train Initiated	
Additional engine/locomotive diagnostic data	
Other miscellaneous operational data (Manufacturer provided)	

26.2 The data will be monitored to provide information in a minimum of the following areas:

- Rule compliance/speed control
- Train handling/fuel conservation
- Training/qualification standards
- Accident/incident analysis
- Litigation/claims and legal
- Identifying mechanical problems.

26.3 Locomotive Video Camera Systems.

A number of CP and Foreign locomotives have been equipped with forward facing on board video camera systems, designed to capture images from crossing accidents and incidents that may occur.

In addition to the camera, a microphone is positioned underneath the cab in the airbrake compartment to capture the sound of the horn, bell and air brakes. Crew conversations are not audible.

The Locomotive Camera System switch (LCS), must be "On" at all times, except for a system malfunction or authorized by the Director NMC. Any practice or action which otherwise interferes with the normal and proper functioning of this equipment will be considered tampering with a safety device and will be subject to discipline or dismissal.

Note: Crews must ensure that the camera's view is unobstructed at all times.

27.0 Pumping Air

If main reservoir pressure cannot be maintained 15 psi above feed or regulating valve setting at low engine speed, air compressor output can be increased by:

- 1 Place reverser handle in NEUTRAL.
- 2 Place generator field switch OFF.
- 3 Advance throttle to not exceed No. 4.

NOTE: On GE & SD90MAC locomotives, leave the throttle in IDLE.

28.0 Response to Alarms**28.1 Continuous Wheel Slip/Pinion Slip Indication**

If wheel slip and/or pinion slip indicator and accompanying ALARM indicates slipping, even though throttle or dynamic braking are reduced enough to prevent slipping:

- 1 **STOP MOVEMENT IMMEDIATELY.**
- 2 Check locomotive wheels while moving slowly to see that all wheels are rotating freely.
- 3 If all wheels are rotating freely, a traction motor pinion may have loosened. Contact the Central Locomotive Specialist and be governed by their instructions. Inform RTC of train delay.
- 4 If no loose pinion is detected and the locomotive is equipped with a traction motor cut-out switch, cut out the motors in sequence until the wheel slip indicator stops.
The locomotive can now be worked unless special instructions specify otherwise.
- 5 If a locked pair of wheels is found the locomotive must not be moved further, until instructions are received from the Central Locomotive Specialist.

28.2 Response to Locomotive Alarm Indications

IF the locomotive alarm is sounding and/or being displayed, the cause of the alarm must be investigated as soon as practical. If the cause of the alarm cannot be determined, the alarm indication may indicate pinion or wheel slip problems and must be handled as per item 28.1.

Note: Before SILENCING continuous alarms by cutting out traction motors or ISOLATING a locomotive when the cause cannot be determined, it must be known that:

- 1 All wheels are rotating freely, and
- 2 There is no evidence of overheating or disintegration of rotating electrical equipment.

28.3 VIA Rail Locomotives - Hot Box and Bearing Alarms

The Warning Light Panel on some VIA locomotives indicates faults for the controlling and trailing locomotives as well as certain cars. Warning lights are labelled and coloured (RED & YELLOW). Whenever a VIA Rail locomotive (lead or trailing) is operated on CP lines:

- | | |
|----------|---|
| 1 | If a Journal or Suspension BEARING FAILURE alarm lights red or if a Journal or Suspension BEARING ALERT alarm lights yellow , then the train must be stopped immediately. |
| 2 | Contact the Central Locomotive Specialist and be governed by their instructions. |

28.4 Locked Axle Protection GE AC Locomotives - Conventional or Distr Pwr Operation

Traction Motor Cut-Out Switch

If one or more traction motors are manually or automatically **CUT-OUT** but their speed sensors are all **CUT-IN**, then the locomotive may continue to operate in the lead or remote consist. Even if **ISOLATED**, it may remain in mid-train location.

Locked Axle Cut-Out Switch

This switch may be placed in the **CUT-OUT** position only when advised to do so by the Central Locomotive Specialist.

The **Locked Axle Cut-Out Switch** is used only when the **Speed Sensor Cut-Out Switch** does not suppress a locked axle alarm. This switch will disable the operation of the alarm bell for a false locked axle alarm. Protection for locked axles is still provided through the **Wheel Slip** light.

The locked axle trainline alarm bell will operate even if the locomotive is isolated, except when the **Locked Axle Cut-Out Switch** is in the **CUT-OUT** position.

If the **Locked Axle Cut-Out Switch** is in the **CUT-OUT** position on a remote locomotive, and the locomotive is **ISOLATED**, it must as soon as practicable, be re-marshalled to the lead consist to enable crew observation.

Speed Sensor Cut-Out Switch

This switch may be placed in the **CUT-OUT** position only when advised to do so by the Central Locomotive Specialist.

This switch is used to cut-out a faulty traction motor speed sensor, but the corresponding traction motor **MUST** be cut-out as well.

Speed Sensor Failure

All GE AC locomotives have software that automatically monitors traction motor (TM) rotation when the locomotive is in RUN and all TMs are cut-in.

If a speed sensor fails, the DID panel will display "Fault Message Stored" or "Ready" and the locomotive monitor will display a calculated speed for the affected TM. The affected motor will continue to power and a locked axle fault will be logged. At this point, no special actions are required by the locomotive engineer.

If the locomotive is subsequently isolated, and if the locomotive is moving above 8 MPH, the usual locked axle alarm bell will immediately sound, the DID panel will display "Locked axle no. ___" and the **Cont'd**.....locomotive monitor will display 0.0 MPH for the affected TM.

If moving at less than 8 MPH, a wheel slide fault will log instead of a locked axle.

Immediately stop and check locomotive wheel rotation as per 28.1 paragraphs 1 and 2.

If it has been confirmed that all wheels are rotating freely, and if the locomotive is operated in RUN and all TMs are cut in, then the locomotive does not need to have the TM or speed sensor cut out and can continue to operate at track speed. However, if any TM is cut out, or if the locomotive is **ISOLATED**, or if the speed sensor is cut-out then the defective locomotive may be moved to a maintenance facility at a speed not exceeding 30 MPH, marshalled in lead consist to enable close observation. The locomotive engineer must update the Crew to Crew Form accordingly.

28.5 Locked Axle Protection EMD SD90MAC Locomotives - Conventional or Distr Pwr Operation.

Traction Motor - Truck/Inverter Cut-Out

SD90MAC locomotives do not have individual traction motor cut-outs and there is no mechanical cut-out switch as on other locomotives. SD90MAC locomotives do not have automatic traction motor (truck) cut-out. A fault in a motor or in an inverter requires the entire truck to be cut-out.

Caution: Cut-out a truck only when the throttle is in **IDLE**.

A fault will cause the display of a fault message and a prompt to press the F3 key on the crew message screen. Pressing F3 causes the Traction Cut-out screen to appear. Select the faulted truck and then press F3 to cut-out (disable) that truck. Exit the Traction Cut-out screen. After a short delay, the message screen will show the truck cut-out.

If only a truck is cut-out but all axle speed sensors are still cut-in (e.g. locked axle detection status for all axles is shown as enabled), then the locomotive may continue to operate in the lead or remote consist. Even if ISOLATED, the locomotive may remain in mid-train location.

Locked Axle Detection Status

There is a Locked Axle Status screen available from the main menu on the message display screen. Normal cut-in status is shown as ENABLED (locked axle detection is enabled). An axle that does not have locked axle protection (due to a possible faulty or cut-out speed sensor) will be shown as DISABLED.

Speed Sensor Cut-out

Caution: Cutting-out (disabling) a speed sensor must only be done when advised to do so by the Central Locomotive Specialist and after following instructions in item 28.2.

Cutting-out a faulty speed sensor is achieved by selecting the appropriate axle and pressing the disable key on the Locked Axle Detection screen. A disabled speed sensor does not require the corresponding truck to be cut-out.

If a speed sensor is cut-out (disabled) on a remote locomotive, the locomotive must be re-marshalled to the lead consist to enable crew observation.

The locked axle trainline alarm bell will operate even if the locomotive is isolated providing all speed sensors are cut-in (enabled).

If a truck is cut-out and the speed sensor on that truck is also cut-out (disabled) because of wheel slip or locked axle alarms, the locomotive can continue to operate at track speed (this differs from GE AC4400 locomotives).

28.6 Dummy Wheelsets

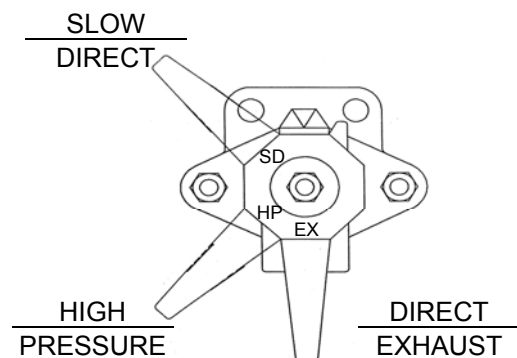
A defective traction motor assembly is sometimes removed and replaced with a temporary dummy wheelset. The locomotive engineer will be advised of the repair made and if there are any speed restrictions. In most cases, a locomotive can be towed at track speed with dummy wheelsets, depending on mechanical services specifications. The defective locomotive must be isolated and marshalled in the lead consist to enable close observation. The Crew to Crew Form must be updated accordingly.

29.0 Car Equipment Instructions

- 29.1** Unless in regular passenger train service, cars with UC (Universal Control) type brake equipment are normally set to be hauled in freight trains. If on occasion they are to be hauled in a passenger train, it is only necessary to cut in the supplementary or emergency reservoir if so equipped.
- 29.2** When passenger cars equipped with D-22 or 26-F control valves are handled in freight trains, the graduated release cap on the control valve must be turned to the direct release position.

29.3 Use of retaining valves

- A** Retaining valves must be used on at least 50% of the cars on freight trains on descending grades of 2% or over if the tonnage is in excess of full haulage capacity for the ascending grade for the locomotives on which the dynamic brake is in effective operating condition, unless the train is controlled with a pressure maintaining brake valve.
- B** Retaining valves must be used on any downgrade where in the judgment of the locomotive engineer their use is considered necessary. Handles should be placed in high pressure position on loaded cars and in slow direct position on empty cars. Please refer to items 14.2 and 14.3.
- C** Retaining valve positions
 EX - Direct Exhaust; air from brake cylinder will exhaust directly to atmosphere.
 SD - Slow Direct; air from brake cylinder will SLOWLY exhaust DIRECTLY to atmosphere.
 HP - High Pressure; air from brake cylinder will exhaust to atmosphere, retaining 20 psi in the brake cylinder.
- NOTE:** Some retainers have a low pressure position which will retain 10 psi in the brake cylinder.



29.4 Prior to coupling brake pipe hoses between equipment, employees must ensure that the hoses are either blown free of foreign matter (dirt or snow) or in the case of an uncharged system, the hoses must be shaken to ensure such foreign matter is removed.

30.0 Work Equipment and Snow Plows - Connecting Air

Snowplows, spreaders, air dumps or other work equipment requiring a supplementary source of air, must be connected to the locomotive main reservoir equalizing pipe.

31.0 Overcharged Conditions

- 31.1** When a train's air brake system is charged to a pressure higher than the prescribed standard for that train, the overcharge will be maintained to the train's destination, providing the brake pipe pressure is not higher than 110 psi.
- 31.2** An overcharged air brake system occurs when the storage reservoirs on the locomotive and/or cars are charged to a value higher than the feed or regulating valve setting on the controlling locomotive. This is indicated by the air brakes being applied on the train or portion thereof, when the automatic brake handle is in the RELEASE position on the controlling locomotive.

31.3 To eliminate an overcharge on a car or block of cars:

A	Close the angle cock between the locomotive and the overcharged car(s).
B	Bleed the reservoirs on the overcharged car(s).
C	Cut the air in on the car(s).

31.4 To eliminate an overcharge on a train:

A	protect against undesired train movement.
B	place the automatic brake handle in RELEASE position.
C	using the feed/regulating valve, ensure equalizing reservoir pressure is adjusted to the required pressure.
D	place the automatic brake handle in EMERGENCY position. Wait at least 2 mins before recharging the train air brake system.
E	a pull-by inspection must always be made to ensure the overcharge has been eliminated.
F	repeat the above procedure if the pull-by inspection reveals the overcharge has not been eliminated.

31.5 An overcharged brake system is most likely to occur in the following situations:

A	When adding one or more cars with an overcharged condition to a train.
B	When attaching locomotive to the opposite end of a train.
C	When changing the locomotive.
D	When picking up cars that were set off of a train operating with higher brake pipe pressure.

32.0 GE AC Locomotives - Special Instructions

32.1 4000/4400 Power Limit Switch.

At speeds less than 15 MPH, the Power Switch on GE AC locomotives can be used to reduce HP on the locomotive. The reduction in HP only applies to the locomotive where the switch has been set to the reduced or 4000 HP position, it is not trainlined to other locomotives in the consist.

The HP boost system will automatically reduce the HP to 4000 when GE AC locomotives reach 25 MPH or greater and will not regain 4400 HP until speed is less than 15 MPH.

32.2 Distributed Power Circuit Breaker.

This circuit breaker on the engine control panel must be placed in the OFF position unless required for Distr Pwr operation. A non-recoverable emergency brake application will result if this instruction is not complied with.

33.0 Fire Season and Prevention - Locomotive Exhaust

33.1 Some locomotives have a tendency to discharge sparks (carbon deposits or unburned oil) from the exhaust stack, especially if they have been idling for extended periods of time (6 to 8 hours). The following guidelines will assist in preventing fires during seasons when there is high risk of starting fires along the right of way.

33.2 Actions which will help reduce sparks:

After departure from a location where locomotives may have been idling for 6 to 8 hours, it is beneficial to advance the throttle to notch 5 for at least ten (10) minutes before working the locomotives under heavy load. Extra care is required near open top bulk sulphur trains.

While operating under load, if spark emissions do occur, decrease throttle to reduce the distance that such sparks may be thrown. This will also help reduce the size and heat content of the sparks.

Enroute, to minimize sparks due to stack emissions and automatic brake applications;

- if the locomotives have been "drifting" in IDLE or operated in low throttle positions for several miles, it is beneficial to advance the throttle slowly, one notch at a time.
- use dynamic brake. It should be considered the primary choice of retardation, and
- use contour braking/throttle modulation by allowing the natural resistance of grade, curvature and friction to slow the train.

33.3 Whenever possible, if a locomotive is suspected of starting fires, it must be shut down to prevent further damage to right of way or adjacent areas. Report accordingly on the Crew to Crew Form and notify the Central Locomotive Specialist.

33.4 Train Crews should be particularly alert to detect any evidence of excessive spark emission from locomotives or the train. Your cooperation in the prevention of fires along the right of way is essential.

33.5 Due to the danger of fires being ignited on the right of way, when yard locomotives are moved on freight trains, they must be moved dead or isolated to their destination. CP locomotives in 1200, 1500, 1600, 6700 and 8100 series will be shut down or isolated at origin (by the Mechanical Department where available) and must not be restarted or operated by train crews enroute.

34.0 Broken Drawbar - Locomotive Towing Cable Safety

34.1 When using locomotive 7/8" tow cables to move equipment (including multi-platform cars), do not exceed the following maximums:

Car Weight	Maximum Ascending Grade
331 to 400 tons	Level to 0.7 percent
261 to 330 tons	0.7 to 1.0 percent
211 to 260 tons	1.0 to 1.5 percent
181 to 210 tons	1.5 to 2.0 percent
156 to 180 tons	2.0 to 2.5 percent
Nil to 155 tons	2.5 to 3.0 percent
Not permitted	Over 3.0 percent

Example: you may tow a 5 platform car whose weight is between 331 to 400 tons up a grade which is .7 percent maximum. If the grade is steeper, be governed by item 34.4 below.

34.2 SAFETY PRECAUTIONS

WARNING! Tow cable may snap. DO NOT stand within striking distance of a tow cable when pulling.

Do not attempt to tow a car with any cable less than 7/8" diameter.

Do NOT attempt to tow more than one car except multi-platform cars when required as per 34.1.

Cable must be carefully inspected for surface defects (such as nicks or gouges) which will drastically reduce safe load limit; do NOT use defective cables.

Avoid pinching the cable while pulling as this will also reduce the safe load limit.

When possible, an employee should be in position to operate the hand brake on a car being towed unless doing so will place this employee in vicinity of tow cable

When possible, apply a light hand brake to the car being towed to avoid slack action that will cause shock loading of the cable and may result in cable failure.

34.3 Tow cable connections:

Do NOT connect a tow cable to an axle.

Do NOT connect a tow cable to a truck sideframe.

DO connect a tow cable securely to the center of a car (e.g., at center sill near broken drawbar/knuckle location); if this is not possible, be governed by item 34.4 below.

34.4 When there is doubt about the safe movement of any car with a locomotive tow cable, arrangements must be made to:

15

- have another locomotive couple onto and move the car from the other end, or
- have mechanical services employees deployed to assist and supervise movement of the defective car.

34.5 After a locomotive cable has been used to tow a car, please report on the Crew to Crew form and advise the Central Locomotive Specialist. This is so arrangements can be made for a locomotive service facility to inspect the cable and if damaged, replace it.

34.6 IMPORTANT: Find and remove the broken drawbar (and related debris) from the track. If this removal cannot be safely accomplished because of the size and weight of a drawbar, request help from mechanical services or other employees in the area.

35.0 AC Locomotive Electronic Display Screen Failure

SD90MAC and GE AC locomotives have two electronic display screens on the control stand. Should one or both screens fail enroute, the following will apply:

35.1 If one display screen fails, the locomotive may continue in service.

35.2 Complete Screen Failure (Both Screens)

If both display screens have failed completely or display asterisks (***) instead of air pressure readings, the problem may be due to one of the following conditions:	
1	Display screen may lose communication with the electronic brake valve. This results in a PENALTY brake application which is non-recoverable unless communication is restored.
2	If locomotive speed is 0 MPH, the computer is programmed to perform a periodic "self diagnostic check" during which air pressure readings will be replaced with asterisks (***). When the self test is complete normal air pressure readings should return.

Trouble shooting procedure:

Ensure train is stopped, because the following steps will also cause a penalty brake application.		
1	ON GE locomotives, reset (switch OFF, then ON) the ELECTRONIC AIR BRAKE & BATTERY CHARGE/COMPUTER circuit breaker.	ON EMD locomotives, reset (switch OFF, then ON) the AIR BRAKE COMPUTER & CAB/DISPLAY COMPUTER circuit breaker.

Cont'd..... This will put the computers through a self check and should reactivate the screens to display all air pressure functions.	
2	If step 1) was successful, recover penalty PCS, perform a Continuity test and proceed.
3	<p>If step 1) was not successful, a replacement lead locomotive is required. If the train has to be moved in order to exchange locomotives, it will be necessary to operate the brakes and controls from a trailing locomotive. Change operating cabs as follows:</p> <ul style="list-style-type: none"> • if required, apply hand brakes to ensure train is protected from unintended movement • to ensure brake pipe pressure is 0 psi throughout the train, place automatic brake valve handle in EMERGENCY and activate TIBS emergency braking feature • on the defective locomotive, turn the air brake computer circuit breaker OFF; this will automatically configure the defective locomotive's automatic and independent brakes for trailing mode; set up all other controls for TRAILING (as per item 15.1). • set up the controls on one of the trailing locomotives for LEAD (as per item 15.2). • if equipped, enter the SBU # into the EOT setup screen or TIBS display unit and perform a pre-departure test of TIBS as per GOI Section 6, item 16.2 • perform a locomotive brake test and a Continuity brake test • the train may proceed at a speed not exceeding 25 mph to the first available point where the defective locomotive can be set-off or re-marshalled to a trailing position. <p>Note: If there is no available trailing locomotive, do not move the train. Wait for another locomotive.</p>

35.3 On Locotrol IV Equipped Trains, if the Locotrol console is not affected, then Locotrol console air pressure displays for UNIT A (controlling locomotive) may be used, instead of operating from a trailing locomotive.

35.4 When reporting screen defects, please report with as much detail as possible what the failure mode was (e.g., screen went completely blank, or screen momentarily re-booted etc.). Quite often the display screens seem to be working properly when locomotive arrives at the diesel shop tracks.

36.0 Snowblaster Operations – If equipped

The snowblaster uses compressed air from the Main Reservoir to clean snow off the railhead. The intention is to prevent train stalls when operating through snow (or other poor rail conditions such as rain etc.) on ascending grades.

The device will be mounted near each lead axle sand bracket on the front of the locomotive.

GE AC4400 & ES4400	EMD SD90MAC's
Activation:	
A manual electrical switch (toggle) and label will be mounted on the EC panel or operators screen. This will activate or disable the snowblaster.	A separate switch on the control console (labelled "Snow Remover") will activate the snowblaster.
Automatic Operation:	
It will be triggered by the lead axle sand pushbutton providing certain conditions are met (e.g., locomotive speed below 12 mph, tractive effort, engine RPM, no bell and no horn), main reservoir pressure greater than 125 psi.	The EMD snowblaster will automatically operate when the snow removal switch is "ON" and certain other conditions are met (no bell, main reservoir pressure greater than 120 psi, sand application).
Manual Operation:	
Below 12 MPH the GE & EMD snowblaster can be manually activated by pressing the "lead axle sand" push-button. Note: when operating under 12 MPH in full throttle conditions, when rail conditions are poor account snow or rain, the lead axle sand push-button must be used.	
Additional Information:	
A manual shut-off valve will be located below deck (on the locomotive engineer's side in front of the fuel tank) that will allow manual shut-off of air flow to the device. The shut-off valve is identified with a tag labeled "Snow Remover." There is also a decal on the side sill that says "Rail Cleaning C/O Cock."	At any speed, by cycling the snow removal switch ON-OFF-ON, the snowblaster will manually operate for a period of 60 seconds. This feature is useful when approaching snow-covered rails, or wet rails where loss of traction is anticipated.
CAUTION: Use of the device may result in reduced visibility near ground level account blowing snow or debris. When employees are entraining or detraining, or when other persons are standing on or near the track, the Snowblaster should not be manually activated by pressing the lead axle sand switch or cycling the "snow removal" switch (SD 90's).	

APPENDIX 1: INSTRUCTIONS FOR CALCULATION OF HAULAGE CAPACITY

1. Determine the class and number of locomotives to be operated on the train. Add together the haulage ratings for all of the locomotives in the locomotive consist as shown in table 1. If a locomotive has traction motors cut out, refer to table 2 to determine what percentage of normal haulage rating to use for that locomotive.
2. Refer in time table to subdivision over which the train is to be operated and multiply the sum obtained in (1) above by the lowest haulage capacity factor between the applicable stations on the subdivision. Note that haulage capacity factors for controlling grades on a subdivision are underlined.
3. The number obtained in (2) above is the haulage capacity, in tons, of the locomotive consist on the subdivision over which the train is to be operated. This tonnage may be exceeded by one percent if by doing so another car can be taken. Any reduction in this tonnage must be authorized by the Operations Manager, NMC.

TABLE 1 LOCOMOTIVE HAULAGE RATINGS

CLASS	HAULAGE RATING	
DS-15-17 (Note 1)	1000	
DRS-17	1000	
DRS-20/24 Mother/Daughter	2000	
DRS-20 DRS-30 abcde	1000	
DRS-20 QEG equipped	1200	1300 (Note 2)
DRF-30	1500	
DRF-30 PTC or QEG Equipped	1710	1790 (Note 3)
DRF-38 (SD60)	2000	
DRF-44 (AC 4400)	2220	2950 (Note 2)
DRF-43 (SD90MAC)	2220	2950 (Note 2)

Table Notes:

1. Must not be used in multiple with any other class of locomotive.
2. Applies only if all locomotives in consist are QEG or PTC equipped, and/or if they are DRF-38, DRF-44, DRF-43 and DRF-60.
3. Applies only to Bulk or Uniform trains (see Section 7, item 2.3).

Note: All other Classes of Locomotives, including VIA Locomotives used in Freight Service, will be handled and rated at the direction of the NMC.

TABLE 2 HAULAGE RATING REDUCTIONS IF TRACTION MOTORS CUT OUT (Also see Section 7 Appendix 3)

Type of Locomotive	Number of Traction Motors Cut out	Reduce Haulage Rating by
All GMD 4-axle locomotives	1	50%
	2	100%
All GMD 6 axle locomotives with DC traction motors	2	34%
	More than 2	100%
DRF-44 (AC 4400)	1	17%
	2	34%
	3	50%
	More than 3	100%
DRF-43 (SD90MAC)	3	50%
	6	100%

APPENDIX 2: Preferred Marshalling Examples: (applicable to items 5.3 and 7.4)

Preferred Marshalling Examples: (applicable to items 5.3 and 7.4)

Lead Locomotive Consist			Loaded Buffer Cars 45t/<65ft		Unit	Loaded Buffer Cars 45t/<65ft		Unit	Loaded Buffer Cars 45t/<65ft		Trailing Train
AC	GP	AC	Car	Car	GP	Car	Car	GP	Car	Car.....	trailing train
AC	GP	AC	Car	Car	GP	Car	Car.....				trailing train
AC	GP		Car	Car	GP	Car	Car.....				trailing train
AC	GP		Car	Car.....							trailing train
AC	GP	AC(no buffer cars required).....								trailing train

Note: GP's are any locomotive(s), (Switcher (SW) or General Purpose (GP)) in the series listed in item 5.1 or any locomotive that cannot be handled in the controlling locomotive consist. AC can be either AC or DC locomotives and the total number is not limited by these examples, provided that, the operating locomotives have coupler alignment control. Also, these examples do not limit the possibility of having other cars between the lead consist and the loaded buffer cars or between buffer cars that are required on either side of a GP or other locomotive.

General Operating Instructions (GOI)

Section 16

Train Handling

TABLE OF CONTENTS

1.0	General Instructions.....	208
2.0	Use of the Independent Brake.....	209
3.0	Use of the Automatic Brake.....	209
4.0	Reporting Undesired Brake Releases.....	210
5.0	Minimizing Sticking Brakes.....	210
6.0	Emergency and Penalty Brake Applications.....	210
7.0	Dynamic Braking (DB).....	211
8.0	Restrictions When Moving Backward.....	214
9.0	Assisting Locomotive(s).....	215
10.0	Introduction to Train Handling Guidelines.....	217
11.0	Starting Freight Trains.....	217
12.0	Stopping Freight Trains.....	217
13.0	Back-Up Movements.....	217
14.0	Slowing or Controlling Freight Trains.....	218
15.0	Definition of Track Profiles.....	218
16.0	Passenger Train Handling.....	220
17.0	Fuel Conservation.....	220
APPENDIX 1: Descending Heavy Grade Job Aid.....		223
APPENDIX 2: Pacing Chart.....		232

1.0 General Instructions

- 1.1** The locomotive engineer will be responsible for proper train handling in both yard and road service.
- 1.2** Braking practice will depend on weather and rail conditions, speed and weight of train, braking capacity, grade and other factors.
- 1.3** The above conditions will govern the point at which a brake application should be initiated, as well as the speed at which a running release can be safely made. A running release must not be attempted under circumstances which will cause damage to couplers or draft attachments.
- 1.4** Braking should be done with care to avoid skidding of wheels, and damage to cars and contents due to excessive slack action.
- 1.5 Winter Conditions**
- A -** During weather conditions which may cause snow or ice build up to occur between brake shoes and wheels, periodic running brake tests must be performed to insure proper braking effort is being provided.
- B -** During weather conditions described above, when trains are approaching a location which will require the use of the train air brake, the locomotive engineer must make an automatic brake application sufficiently in advance of that location to determine that brakes are working properly.
- C -** If there are abnormal train braking indications (e.g., the brakes have had time to warm up and speed should be decreasing, not remaining the same or increasing) the train shall be stopped by a full service brake application with dynamic brake fully applied (using care not to jackknife the train). If, in the locomotive engineer's judgment, circumstances require an emergency brake application, this is to be done without hesitation.
- D -** After stop is made, train will be inspected to determine that brake shoes are free of snow and ice build up before proceeding.
- E -** Immediately after proceeding, a running brake test must be made at a safe speed to determine whether or not the brakes respond properly.

- 1.6 A -** A train or locomotive must start down a heavy or mountain grade at a very slow speed, gradually allowing speed to increase as braking power is seen to be ample.
- B -** Train crews shall not operate down heavy or mountain grades where, in their judgment, a combination of ambient temperatures and heavy snow conditions are such as to make the operation unsafe.
- 1.7** Do not handle cars without charging the air brake system unless the cars can be handled safely and stopped as required by the locomotive brakes. If necessary, couple the air hoses and charge the air brake systems on a sufficient number of cars to control the movement.
- Note:** A cut of cars may be considered sufficiently charged with air only after the last car being charged with air has had the air cut in, with its rear angle cock closed, for at least 5 minutes. The locomotive engineer must ensure main reservoir pressure on the locomotive is at least 105 PSI for the entire 5 minutes.
- On beltpack operations, the 5 minutes must commence only after the message "Brake Recovery Complete" has been heard.
- 1.8** When coupling together two portions of a train, a brake pipe reduction of 35 psi is to be made before opening the angle cock, unless train movement can be prevented with the locomotive brakes.
- 1.9** When snow and ice conditions are such that they are building up in yard tracks, elevator tracks, industrial tracks and **particularly on crossings** within such tracks, the locomotive must be run through the tracks prior to cars being set out, lifted or moved.
- Note:** In the application above, extreme caution must be used at crossings with minimal rail activity and high vehicular traffic.

2.0 Use of the Independent Brake

- A** - The blocking of the independent brake handle in the BAIL position is prohibited.
- B** - Locomotive engineers are to acquaint themselves with the proper use of the bail inasmuch as the number of locomotives in the consist dictates the time that the independent brake handle must be depressed. To release the locomotive brakes when train brakes are applied, hold the independent brake handle in the BAIL position for four seconds per locomotive in the consist.
- C** - Use of the independent brake to control train speed can cause overheating of the locomotive wheels. Therefore, the independent brake should not be used to control train speed except as per Section 16, item 7.7 c), 12.1 e) and 12.4 b)
- D** - Full application position on the independent brake is used when the locomotive is stationary.
- E** - To control a consist of seven or more locomotives, the automatic brake is to be used instead of the independent brake.

3.0 Use of the Automatic Brake

- 3.1** When commencing a service application and the train air brake system is FULLY charged, the initial equalizing reservoir reduction must not be less than 5-7 psi.
- 3.2** When commencing a service application and the train air brake system is NOT FULLY charged, one of the following methods must be used:
 - A** - On Conventional or Distr Pwr trains (except tail end remote), make an equalizing reservoir reduction of at least 7 psi below the rear car brake pipe pressure.
 - B** - On Conventional or tail end remote equipped trains, using the equalizing reservoir gauge, measure at least a 7 psi reduction from the point where the service exhaust starts to blow.
 - C** - On Conventional and Distr Pwr equipped trains, the following method may be used, but in order to avoid an undesired release, it is necessary to understand the following information:

- **True Gradient**

After charging or re-charging, if brake pipe pressure (BPP) on the rear car has stopped rising, then the train air brake system is considered FULLY charged (true gradient). For example the rear car has reached 88 psi and won't increase any more. The highest obtainable rear car pressure must be recorded on the Crew to Crew form.

- **False Gradient**

During charging or re-charging, if BPP on the rear car is still rising, then the train air brake system is NOT FULLY charged (false gradient). For example the rear car has reached 85 psi, but is still rising.

- **Amount of False Gradient** - equals True Gradient minus False Gradient.

EXAMPLE:

- 88 psi	highest/normal rear car BPP	(True Gradient)
- 85 psi	current rear car BPP	(False Gradient)
= 3 psi		(Amount of false gradient)

When commencing a service application and the train is NOT FULLY charged,

- 1** - determine the amount of false gradient (e.g., in the example above it was 3 psi)
 - 2** - reduce equalizing reservoir pressure 7 psi plus the amount of false gradient (e.g., 7 + 3 = 10 psi)
 - D** - the application of paragraphs A and C above, if TIBS fails to display rear car brake pipe pressure and it is necessary to apply the brake with the train air brake system not fully charged, an equalizing reservoir reduction of at least 5 psi more than the last reduction must be made.
- 3.3** Using the regulating valve to make brake pipe reductions is prohibited.
 - 3.4** Should locomotive brake pipe pressure be reduced below 48 psi during service brake operation, the train must be stopped and the brake system recharged.
 - 3.5** Where practicable, a train must not be started until the air brakes are fully released. In the absence of brake pipe flow indication or last car brake pipe pressure reading, a time allowance should be made, under normal conditions, allowing one minute for every 25 cars in the train.

4.0 Reporting Undesired Brake Releases

- 4.1** Locomotive engineers are responsible for reporting undesired brake releases immediately to the RTC and to record the location of occurrence by subdivision and mile, as well as description of use of the automatic brake prior to the release, for furtherance to the Road Manager.

5.0 Minimizing Sticking Brakes

- A** - Do not overcharge the train brake system above the standard pressure for that train, unless otherwise specified as per special instructions.
- B** - Whenever a train is operating in a false gradient condition, if an angle cock is closed such as when changing a defective air hose, a build up of brake pipe pressure in the cars ahead of the closed angle cock may result in sticking brakes when the angle cock is opened. In order to eliminate the possibility of sticking brakes, a full service brake pipe reduction must be made before the angle cock is closed.
- C** - The total brake pipe reduction should be 10 psi or more before the release is made. An overall reduction of less than 10 psi should therefore be increased to 10 psi or more before releasing. Brake pipe exhaust must be stopped for at least 20 seconds before releasing.
- D** - Whenever air brakes are used to stop a train, if a 15 psi brake pipe reduction has not been made, it must be increased to that amount and comply with GOI Section 13, item 9.4, Continuity Test Procedure.

6.0 Emergency and Penalty Brake Applications

- 6.1** All employees concerned must familiarize themselves with the location of the emergency valves on locomotives and cars so equipped. Emergency valves are to be used only in cases of emergency, and when used must be opened wide and left open until the movement is stopped. Members of the train crew are to communicate to the extent possible in the event of an emergency brake application so as to ensure personal safety.

- 6.2** An EMERGENCY BRAKE APPLICATION must not be made unless it is necessary. In cases that require stopping in the shortest possible distance, when contact has been made or to avoid imminent contact with, someone or something that could result in harm to members of the public, employees or property, an EMERGENCY BRAKE APPLICATION must be made.

- On trains so equipped, the TIBS emergency brake feature must also be activated.
- If accessible to other crew members, the conductor's emergency valve must be opened fully and left open until the movement stops.

- 6.3** When an EMERGENCY BRAKE APPLICATION occurs from any source, the locomotive engineer must immediately:

- activate the TIBS emergency feature (if so equipped)
- place the automatic brake handle in the EMERGENCY position and leave it there until the movement stops.

- 6.4** In the event of a PENALTY or EMERGENCY BRAKE APPLICATION while moving, the locomotive engineer must, until the movement stops, regulate locomotive brake cylinder pressure to obtain the shortest possible stop required by the situation. Care and good judgment must be exercised to avoid locomotive wheel slide and severe in-train forces.

Note: After an emergency brake application, brake pipe vent valves will remain open for as long as one minute. No attempt should be made to release brakes or recharge the brake pipe until this interval has elapsed.

- 6.5** If there is an indication by the air flow indicator or otherwise that the air brakes are being applied from other than the automatic brake, the locomotive engineer must immediately shut off power, placing the automatic brake handle in full service position if on a freight train, or in emergency position if on a passenger train, and leave in that position until movement stops. The automatic brake handle should be returned to the Release position as soon as practicable, so that any break in a hose or brake pipe may be more readily found. Care is to be taken that sufficient main reservoir pressure is maintained.

- 6.6** To stop a locomotive in an emergency situation, if both the air brake and the dynamic brake are inoperative, “plug” or reverse the traction motors. This procedure may be hazardous to personnel and equipment and should only be used as a last resort. It should be performed as follows:
- A** - Alert all personnel on the locomotive.
 - B** - Place the throttle in IDLE.
 - C** - On locomotives so equipped, place the selector lever in the No 1 or Power position.
 - D** - Place the reverser handle in the position opposite to the direction of locomotive movement.
 - E** - Advance the throttle to FIRST notch only.

7.0 Dynamic Braking (DB)

7.1 Using Dynamic Brake

A	Except as otherwise restricted, full available DB may be used with up to a maximum of 200,000 lbs (referred to as DB factor of 20).
Note: On a Distributed Power train, TrAM messages will indicate if the use of DB must be restricted based on the number and location of locomotives in the train. If restricted, the TrAM message will indicate the maximum retarding force to be used, and <i>is based on DB being cut in on all locomotives on the train.</i>	

B - Summary of available DB on locomotives:

Locomotive Type or series	Retarding Force per locomotive	DB Factor
All 4 axle (except GP60)	= 40,000 lbs	4
CP SD40-2	= 60,000 lbs	6
SOO SD40-2	= 60,000 lbs	6
Leased SD40/40-2/GP60	= 60,000 lbs	6
All CP AC4400 & ES44AC	= 98,000 lbs	10
CP 9100 - 9160 (SD90MAC)	= 96,000 lbs	10
CEFX 1026 - 1059 (AC4400)	= 96,000 lbs	10
SOO 6000 - 6062 (SD60)	= 80,000 lbs	8
Leased SD60	= 80,000 lbs	8
Some leased units	= nil	nil

NOTE: Some older SD40/40-2 locomotives and other 4 & 6 axle locomotives: Leased Units, Yard Engines, low horse power road switchers and most SOO and former SOO locomotives are NOT equipped with DB.

Many StL&H, D&H, DM&E and ICE locomotives may NOT be equipped with DB.

Note: If in doubt, check locomotive control stand for DB controls or refer to locomotive information on consist list or contact the Locomotive Specialist.

EXAMPLE:

- 3 CP SD40s = 3 times factor 6.0 = 18 (DB factor is 18)
- 2 SD90MACs = 2 times factor 10 = 20 (DB factor is 20)

C - DB should be cut-IN on the lead locomotive and cut-OUT on trailing locomotives so that DB factor does not exceed 20.

Note: When operating conditions permit, it is acceptable to operate with the lead locomotive isolated. Ensure DB factor does not exceed 20 when the locomotive is placed back “on line”.

D - Locomotives required to have the DB cut-OUT that are not equipped with a cut-OUT switch, must be isolated.

E - Information in regard to the DB factor can be ascertained by:

- information provided on part 3 of the Schedule B form,
- checking each locomotive OR
- information provided on the Crew to Crew Form.

F - Whenever the locomotive consist is altered in such a way that DB must be cut-OUT on certain locomotives, the locomotive engineer in charge must record this information on the Crew to Crew Form for the information of the next crew.

G - When changing off with another locomotive engineer, if the Crew to Crew Form does not clearly indicate that the DB factor is 20 or less, then the locomotive engineer in charge must inspect the consist, limit DB properly, and then update the Crew to Crew Form accordingly.

H - Unless otherwise provided, if the DB factor of any foreign locomotive is not known or is in doubt the following applies:

- On 4 axle locomotives the DB factor is 6.
- On all 6 axle DC traction locomotives the DB factor is 8.
- On all 6 axle AC traction locomotives the DB factor is 10.

CAUTION: the DB factors above are estimates; actual DB capacity may be less than indicated by this instruction.

7.2 When changing from motoring to DB when the train is in motion, pause for ten seconds with the throttle in IDLE.

7.3 When moving into the braking zone, pause at the minimum braking position long enough to adjust train slack, then move the handle slowly within the braking zone to obtain the desired braking effect.

7.4 After releasing the DB in preparation for applying power, the throttle must be advanced with care to ensure gradual adjustment of train slack.

7.5 When commencing the descent of grades with train slack stretched, and it is known that both the DB and the train air brake will be used to control the train, the train air brakes must be applied first. The degree of the application is to be sufficient to control train speed throughout all but the steeper portions of the descent where DB is to be increased to whatever degree is required to provide the additional braking needed to control train speed.

7.6 Handling Dynamic Brake (DB) in the following situations:

<p>A - At Sidings and Crossovers</p>	<p>When entering a siding or crossover and the DB factor of the lead locomotive consist is 14 or greater, the DB effort MUST NOT exceed 60 Klbs (500 amps on DC Traction motor power) before reaching the turnout and until at least half the train has entered the siding or crossover.</p>
<p>B - When governed by Temporary Speed Restriction</p>	<p>When the DB factor of the lead locomotive consist is 14 or greater, the DB effort MUST NOT exceed 60 Klbs (500 amps on DC Traction motor power) for approximately <i>one half mile</i> prior to the beginning of, or when the locomotive is moving over any track governed by temporary speed restriction. Note: The train air brakes and DB may be used to comply with the speed restriction.</p>
<p>C - On Yard Tracks</p>	<p>When operating on any yard track, if the DB factor of the lead locomotive consist is 14 or greater, then the DB effort MUST NOT exceed 60 Klbs (500 amps on DC Traction motor power).</p>

7.7 A - The train air brakes and DB may be used in conjunction with each other. To avoid skidding locomotive wheels during this operation, the locomotive brakes must be bailed off manually to protect against a DB interlock malfunction.

B - When the release of an automatic brake application is to be followed by a DB application or an increase in DB, the DB should be applied before releasing the automatic brakes. However, the DB should be reduced for at least two minutes after releasing the automatic brakes to prevent a run-in of slack of jackknifing proportions.

- C -** The independent brake may be used in conjunction with DB but only at speeds of 10 MPH and lower.
- On locomotives without extended range DB, wheels are likely to skid if independent brake pressure of more than 25% at 10 MPH or 50% at 5 MPH is used, based on maximum pressure posted in the cab.
 - On locomotives with extended range DB, close observation of DB effort displays and locomotive brake cylinder pressure is required to ensure that total braking effort does not cause wheel slide or loss of DB as per IPS pressure settings described below.

D - Independent Pressure Switches (IPS)

These are switches activated by pre-determined pressures in locomotive brake cylinders that will reduce, remove or restore DB levels. IPS are designed to help prevent locomotive wheel slide on locomotives equipped with extended range DB. IPS switches will function as intended during normal DB or during DB holding (refer to item 7.8 a) next page).

IPS pressure settings operate as follows:

1 - On GE Locomotives:

GE locomotives are not equipped with Independent Pressure Switches (IPS). The locomotive computer will monitor wheel rotation in conjunction with brake cylinder pressure and DB levels. DB will be automatically reduced if a combination of DB and brake cylinder pressure are too high.

2 - On SD90MACs:

IPS pressures are set at 10, 15 and 23 psi. When the locomotive is in DB, and

- if locomotive brake cylinder pressure rises to 15 psi, DB is reduced
- and if pressure continues to rise to 23 psi, DB is removed entirely
- if pressure is then lowered to 15 psi, DB is restored but at a reduced level and
- if pressure is then lowered further to 10 psi, DB is restored entirely.

3 - On DC traction locomotives with extended range DB, (see list in item 7.7 e), IPS pressures are set at 10 and 15 psi. This means that if the locomotive is in DB and

- if locomotive brake cylinder pressure rises to 15 psi, DB is reduced or removed entirely.
- if pressure is then lowered to 10 psi, DB is restored entirely.

- E** - The following CP/StL&H/SOO locomotives are equipped with extended range dynamic brake:

Locomotive Type	Locomotive Number
AC4400	CP 9500 to 9683 CP 8500 to 8580 CP 8600 to 8655 CP 9700 to 9740 CP 9750 to 9784 CP 9800 to 9840 CEFX 1026 to 1059
ES44AC	CP 8700 to 8899
SD90MAC	CP 9100 to 9160
SD60	SOO 6000 to 6062
SD40/SD40-2	CP 786 SOO 778 CP or SOO 6601, 6602, 6604, 6606, 6608, 6610 6613 and 6615

- F** - Traction motors can be cut-OUT one at a time on an AC4400 locomotive. Even with a traction motor cut-OUT, DB is available but at a reduced level (5/6 capacity). This does not alter the DB factor of 10.
- G** - On an SD90MAC locomotives, it is not possible to cut-OUT a single traction motor. You may cut-OUT one truck (3 traction motors). If only truck # 1 is cut-OUT, then DB is approximately 50%. The DB factor is 5. If truck # 2 is cut-OUT, then DB is nil.

7.8 DB Holding Feature

A feature that HOLDS or maintains DB if an emergency or penalty brake application occurs for any reason. The PCS switch will open immediately, but normal DB control is retained indefinitely. All of CP AC traction locomotives and CEFX 1026 - 1059 locomotives are equipped with DB holding features.

Additional information about DB holding:

Trailing locomotives depend on the controlling locomotive for DB holding feature. If the controlling locomotive is equipped with DB holding, then trailing locomotives will hold DB if an emergency brake application occurs. Conversely, if the controlling locomotive is not DB holding equipped, then trailing locomotives will not hold DB if an emergency brake application occurs.

On Distr Pwr operated trains, the remotes will not hold DB if an emergency or penalty brake application occurs but will develop 45 psi locomotive brake cylinder pressure.

7.9 DB Holding Feature Operating Instructions:

- A** - On CP locomotives with an Emergency or Penalty PCS switch open, and with a locomotive in DB holding mode, DB interlock will not prevent the build-up of locomotive brake cylinder pressure caused by the drop in brake pipe pressure. This build-up of locomotive brake cylinder pressure can only be reduced by operation of the independent bail.
- B** - While in dynamic braking mode, if a controlling locomotive is equipped with DB holding feature, and if an emergency or penalty brake application occurs for any reason, the locomotive engineer must regulate brake cylinder pressure (bail and depending on the situation, moderately apply independent brake) so that the DB holding feature will function as intended. Close observation of DB effort displays and locomotive brake cylinder pressures is required.
- C** - After the movement stops, Emergency PCS must be recovered as per GOI Section 15, Item 14.0. Penalty PCS must be recovered as per Section 15, item 13.0.

7.10 Dynamic Brake Interlock (DBI)

A feature which (while operating in DB) prevents application of the locomotive air brakes when automatic service brake applications are made; unless otherwise specified, DBI does not function during Emergency or Penalty brake applications.

8.0 Restrictions When Moving Backward

Note: Extreme caution and good judgment must be used when making reverse movements. Throttle is to be advanced slowly and only sufficient enough to cause the equipment to move. Once the equipment starts to move, throttle is to be reduced to only maintain movement.

8.1 The following table is to be used when moving backward, shoving, doubling over or assisting.

The tractive effort (amp) values in the table are for the indication that will be shown on the lead locomotive.

Unit Type	Maximum Tractive Effort on:	
AC	Curves & Turnouts	Straight Track
1 unit	150 klbs	Maximum available
2 units	75 klbs	110 klbs
3 units	50 klbs	75 klbs
DC	Curves & Turnouts	Straight Track
1 unit	900 amps	900 amps
2 units	450 amps	600 amps
3 units	300 amps	450 amps
Exception: If the above ratings are not sufficient to move, then the ratings may be exceeded, but only to the extent to cause or allow movement of the equipment. Extreme caution and good judgment must be used as there is a high risk that jackknifing may occur.		
Note: No more than 3 operating locomotives may be used when making reverse movements. Additional locomotives must be isolated.		

8.2 On Distr Pwr trains, if at least 35 cars/platforms separate each locomotive consist, then each consist is permitted the limits as indicated in item 8.1 and in the application of item 8.3.

8.3 On Southern Ontario and Montreal Service Areas, if any part of the movement is on other than main track, and if you are handling one or more cars, the limits as shown for curves & turnouts in item 8.1 must be used when moving backwards, shoving or doubling over.

8.4 On Distr Pwr trains which have (or will have) the remote locomotive located at the extreme rear of train, a maximum of 2 AC locomotives in the lead consist may be operating ("on the line") when moving backward, shoving or doubling over. Use only enough power to start the movement, increase throttle very gradually and avoid using throttle 5 or greater in conjunction with heavy brake pipe reductions to control the movement. Whenever practicable, if you are coupled to the remote, use it to help move backwards so that buff force is reduced behind the head end locomotives.

9.0 Assisting Locomotive(s)

(Note: This instruction is governed by the Table in item 8.1.)

- 9.1** a) When a locomotive is assisting, if practicable, the brake pipe hose must be coupled and the angle cocks open. The locomotive engineer of the lead locomotive shall operate the brakes. On the assisting locomotive, the automatic brake must be cut "OUT" and the handle left in the RELEASE position. The independent brake must be cut IN to allow use of the bail.
- b) An assisting consist must not be coupled behind restricted equipment being handled at the rear of a train.

Note:

- I. It is not required to couple the brake pipe between the assisting locomotives and the train being assisted provided both locomotive engineers have a thorough understanding of the task at hand, and they have completed a Job Briefing discussing all pertinent information such as; number of loads, empties, tonnage, length, number of locomotives, Dynamic Braking, any traction motors cut out, speed, braking practices, and where the assisting locomotives will be cut off. Once movement has commenced, radio communication between the locomotive engineers must be maintained at all times and any sudden changes to train operation, Air Flow or the integrity of the train air brake system must be immediately communicated and the appropriate action taken.

The train being assisted must be:

- operating without a caboose, riding platform or crew transportation car.
 - equipped with a fully operative SBU or tail end remote.
 - requires help to crest an ascending grade.
- II. While moving, if there is any indication that an EMERGENCY application has occurred, the assisting locomotive engineer must:
- immediately reduce the throttle to IDLE and
 - apply about one-half of full independent brake.
- This will help avoid severe slack run-in while the movement stops.
- III. If the operating engineer indicates that a SERVICE application will or has occurred, the assisting locomotive engineer must:
- immediately reduce the throttle to IDLE and
 - regulate locomotive brake cylinder pressure to the degree required to avoid severe in-train forces.
- IV. A definite understanding of the train's operation must be maintained between both locomotive engineers at all times, especially when starting, slowing or stopping the train.
- V. Caution and good judgment must be used when assisting movements. The throttle on assisting locomotives is to be advanced slowly and only sufficient enough to assist with causing the equipment to move. Once the equipment starts to move, throttle is to be reduced to only help maintain movement.

9.2 Placement of Assisting Locomotives in a Train

Note 1: This applies to all train types mentioned in Section 7.

Note 2: A TrAM check is **required** to determine compliance for assisting locomotive placement. If the locomotive types being used to assist do not match those in the Distr Pwr Trains, the TrAM check must be done with types of locomotives that provide the same axle count as the assisting locomotives. For instance, if the assisting locomotives are three GP38s (total axle count 12), the TrAM check may be done by substituting one AC locomotive (axle count also 12) for the three GP38s. Refer to GOI Section 15, Appendix 2 for axle counts.

Adding Assisting Locomotive(s) to head end of train	
Conventional trains	Distr Pwr trains
Must comply with GOI Section 15, item 4.0, "Number of Locomotives in a Basic Consist" (24/30 Driving Axles)	Maximum 24 driving axles allowed

Adding Assisting Locomotive(s) to Extreme Rear	
Conventional Trains	
As per table in item 8.1	
Distr Pwr Trains	
A. Distr Pwr Train with Remote Consist at Extreme Rear	
As per table in item 8.1, maximum of 24 driving axles allowed on assisted trains only.	
Note: the remote locomotive at the extreme rear must be included in the number of locomotives that will be assisting. E.G. – If one locomotives will be assisting a train with one tail end remote, then the total locomotives as per the table in 8.1 would be two.	
B. Distr Pwr Train with Remote Consist Placed Mid Train	
As per table in item 8.1	
<ul style="list-style-type: none"> • Heavy Bulk • Heavy Uniform 	<ul style="list-style-type: none"> • Light Bulk • Light Uniform • Mixed
1. At least 25% of train weight must be between the last in-train remote locomotive consist and assisting locomotive(s).	1. Cars immediately ahead of assisting locomotive(s) must pass Remote Zone Rules for one remote locomotive (5 cars or platforms). A TrAM check must be used to confirm this situation.
Note: A TrAM check will fail if more than 12 driving axles are on the rear of the train. In this case, the provisions of item 8.1 apply with a maximum of 24 driving axles allowed.	

Adding Assisting Locomotive(s) to Mid Train Location	
Conventional & Distr Pwr Trains	
<ul style="list-style-type: none"> • All train types 	
Assisting locomotive(s) are to be considered as remote locomotives in this application. A TrAM check <u>MUST</u> be used to verify marshalling and remote zone rules.	

16

10.0 Introduction to Train Handling Guidelines

10.1 Knowledge of the road and train make-up are the most important factors the locomotive engineer must take into account when developing a train handling plan to operate safely, efficiently and with competence.

The purpose of these guidelines is twofold:

- 1 - to eliminate the occurrence of personal injury associated with severe slack action and,
- 2 - to minimize damage to the draft gear, cars and lading caused by poor train handling practices.

The particular care and attention required when starting or stopping a train must also be exercised when the train is undergoing a transition from bunched to stretched or vice versa. Changes in slack due to grade changes and/or train make-up, as well as those initiated by the locomotive engineer must be handled in such a way as to maintain the in-train forces within acceptable levels.

10.2 GE AC4400 and GM SD90MAC Locomotives - Tractive Effort

Knuckles for standard freight cars are designed to withstand approximately 300,000 lbs of continuous tractive effort. Knuckles for bulk commodity freight cars are designed to withstand approximately 400,000 lbs of continuous tractive effort.

One AC4400 or SD90MAC locomotive is able to develop up to 180,000 lbs of tractive effort when starting a train from a standstill.

At 13 MPH, one SD40 locomotive in throttle 8 will develop 71,000 lbs of tractive effort and at 9 MPH, one AC4400 or SD90MAC locomotive in throttle 8 will develop 145,000 lbs of tractive effort.

Due to the high level of tractive effort AC4400 or SD90MAC locomotives are able to develop, caution must be exercised when starting trains to avoid train separation.

11.0 Starting Freight Trains

Factors to be considered:

Throttle response characteristics of locomotive consist.

Weight and length of train.

Amount of slack in train.

Weather.

Grade.

Rail conditions.

Proximity of curves in relation to head portion of train.

Train marshalling.

Rear car should be started with care, using lowest throttle possible to start train moving.

After train is moving, throttle may be moved to the next higher position when amperage or tractive effort begins to decrease.

12.0 Stopping Freight Trains

Factors to be considered:

Knowledge of the territory over which you are operating is extremely important. With this familiarity, planning ahead will enable you to select the most desirable train handling method.

Unless rules specify otherwise, during planned stopping, slowing or controlling train speed, if dynamic brakes are available, the power braking method should be avoided.

Total braking effort from dynamic and air brakes should be kept at the lowest practical level when stopping in curve territory.

In many of the train handling methods, a final reduction is made approximately 200 feet from stop. This reduction is to keep the train bunched.

When the instructions require that the locomotive brakes be applied to complete a stop, brake cylinder pressure must be sufficient to prevent a run-out of slack without creating excessive buff forces.

A 30 second pause between split reductions minimizes in-train forces.

Unusual blocking of loads or empties (train marshalling) must be considered in choosing the proper train handling method.

The various train handling methods must be known and understood. The method that you select should be the one that minimizes in-train forces and locomotive fuel consumption.

13.0 Back-Up Movements

Factors to be considered:

Locomotives can develop enough buff force to cause trailing locomotives and cars in train to jackknife.

The number of powered axles in the locomotive consist determines the potential total buff force.

Slack should be stretched, when necessary, to reduce buff forces when starting.

Short car/long car combinations, proximity of curves to head end of train and trains with empties on head end require special consideration.

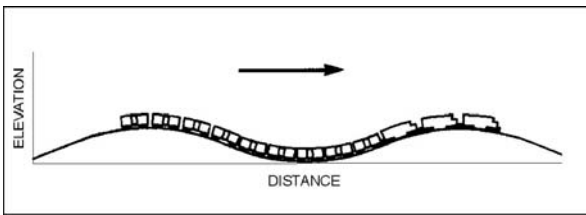
14.0 Slowing or Controlling Freight Trains

Methods to be considered:
Throttle Modulation - Gradually reduce throttle one notch at a time to adjust train slack gradually until desired speed is reached.
Dynamic Brake - If the dynamic brake alone will provide sufficient retardation to slow or control speed, use of the train brakes is unnecessary.
Stretch Braking - Throttle 4 or less with automatic brake application.

15.0 Definition of Track Profiles

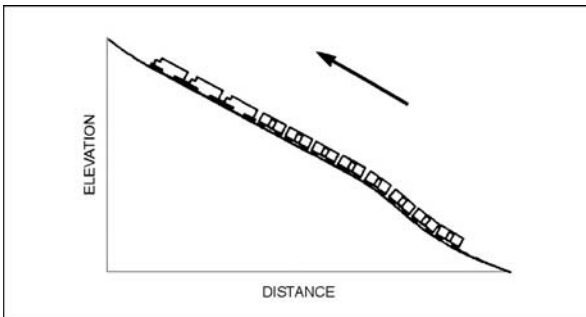
15.1 Undulating Grade

A track profile with grade changes so often that an average train passing over the track has some cars on three or more alternating ascending and descending grades. The train slack is always tending to adjust as cars on descending grades tend to roll faster than those on ascending grades.



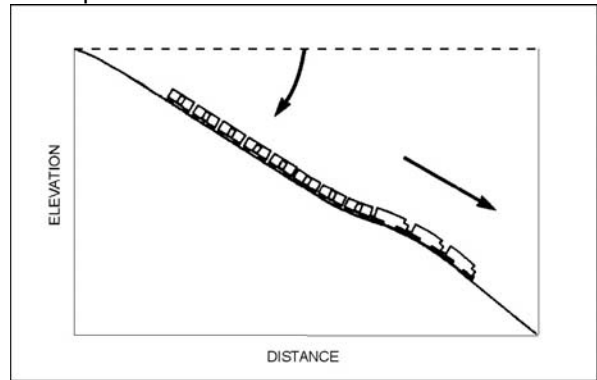
15.2 Ascending Grade

An ascending grade is considered HEAVY between and including 1.0 and 1.8 percent. A LIGHT grade is below 1.0 percent.



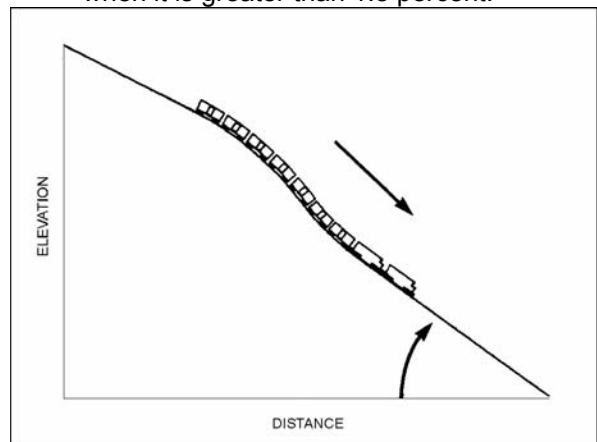
15.3 Descending Grade

A descending grade is considered HEAVY between and including 1.8 and 0.8 percent, while a light descending grade is below 0.8 percent.



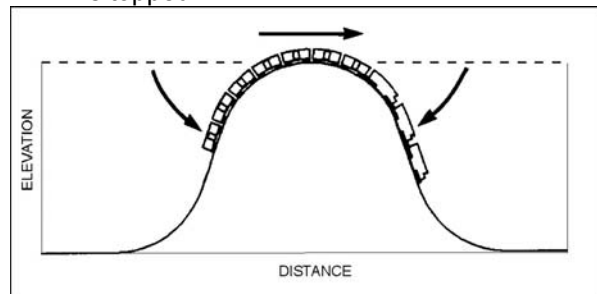
15.4 Mountain Grade

A grade is designated a MOUNTAIN grade when it is greater than 1.8 percent.



15.5 Cresting Grade

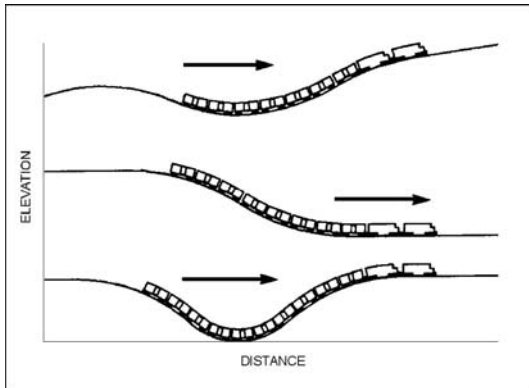
A long ascending grade which rapidly changes to a long descending grade, both of significant magnitude to require a change in the train handling procedure when the grade is topped.



16

15.6 Sag or Dip

A rapid decrease in grade followed by an increase in grade sufficient to result in abnormal slack adjustment.



Summary

Two major considerations should govern your selection of the type of train handling method for a given situation.

- 1 - The first concerns the importance of minimizing in-train forces and slack action, thereby reducing derailment possibilities and avoiding costly damage to equipment and/or lading.
- 2 - The second consideration is the importance of utilizing the most fuel efficient method of train handling. From a fuel consumption viewpoint, dynamic braking is superior to stretch braking whenever the throttle position, during stretch braking, is RUN 2 or greater.

16.0 Passenger Train Handling

- 16.1** When approaching stopping points, after gradually shutting off power or adjusting throttle as required, and after allowing for any necessary slack adjustment, the initial reduction must be at least 10 psi to ensure brakes apply throughout the train. Subsequent brake pipe reductions will depend upon train speed.
- 16.2** To avoid slack action, the locomotive brake may be held off during the first reduction, if necessary, until the train brakes have applied.
- 16.3** After the speed of the train has been reduced sufficiently, the brakes may be graduated off, if necessary.
- 16.4** When the speed has decreased or the deceleration rate is too high, brake cylinder pressure should be reduced in graduated steps. This is accomplished by moving the automatic brake handle to RELEASE position, on a Passenger equipped 26 type brake valve, move the handle slightly toward release position in the application zone. The equalizing reservoir gauge should show an increase of approximately 4 psi. Do not attempt a further graduation after the brake pipe pressure has been restored to within 10 psi of the standard brake pipe pressure. Graduations should be spaced so a relatively low brake cylinder pressure will be retained when the train is moving 15 MPH or less, especially with cast iron shoes.
- 16.5** When making a spot stop in passenger service, braking should be commenced at a sufficient distance from the stopping point to allow for two distinct automatic brake applications.
The final application should be commenced at a speed which will permit a light reduction to bring the train to a stop. Time should be allowed for all brakes throughout the train to be released before starting this application.
- 16.6** When making slowdowns on passenger trains, the slack should be kept stretched by working light power. As the train slows down from the brake application, the throttle must be reduced to prevent excessive load meter readings.
- 16.7** When passenger trains are controlled by use of a back-up hose or valve, the locomotive engineer must not allow the speed to become excessive. When it is noted that brakes are being applied, place the automatic brake cut-off valve in OUT position. Power must be reduced as required and brakes must not be released

until stopped or a signal is received to continue the movement.

17.0 Fuel Conservation

Using the most fuel efficient method of operation, not only reduces the amount of fuel used, it can also have tremendous advantages environmentally. The reduction of emissions into the atmosphere, such as hydrocarbons, nitrogen oxides, carbon monoxides, sulphur dioxides and particulate matter are greatly reduced.

Because fuel conservation techniques are of such importance, the following train handling guidelines are required, whenever, and wherever practicable. These instructions are in addition to those train handling guidelines and instructions contained in GOI Sections 15 and 16. Whenever practicable, the most fuel efficient method of operating must be used.

A	Dynamic Brake should be considered the primary choice of retardation.
B	Use contour braking/throttle modulation, allow the natural resistance of grade, curvature and friction slow the train.
C	Use a combination of low power split reduction and dynamic braking.
D	When choosing the low power split reduction method, the following steps must be followed: <ol style="list-style-type: none"> 1) reduce the throttle to the 4th notch or less. 2) the train air brakes must be applied in the following sequence: <ul style="list-style-type: none"> • make an effective minimum reduction. • reduce throttle again. • make additional brake pipe reductions in 2-3 psi increments as required, throttling down if possible between each supplement. <p>* There are occasions when "ZERO THROTTLE" stretch braking might be employed - i.e. cresting grades, relatively short train with multi unit consists, trains where loads are marshalled near the head end, trains which are dynamically stable and are virtually slack free (i.e. bulk trains).</p>
E	Unless authorized by Time Table or Special Instruction, High Throttle Power Braking (notch 5-8) is prohibited.
F	Whenever practicable, avoid increasing the throttle while the brake is set.

16

G	When a train is going to be delayed for a period of time greater than 20 minutes, the RTC is responsible to communicate to the affected crew: <ul style="list-style-type: none"> • the location and estimated duration of delay • the train crew will then, using the pacing chart, (see APPENDIX 2) calculate the speed required based on their distance from the delay point and the duration of the delay.
H	Avoid short bursts of speed.
I	When charging the train air brake system, advance the throttle only when Main Reservoir pressure cannot be maintained at or above 105 psi., then promptly return the throttle to IDLE as soon as Main Reservoir pressure exceeds 105 psi.
J	The following locomotive defects are of particular significance concerning the efficient use of fuel and must be reported to the Central Locomotive Specialist: <ol style="list-style-type: none"> 1) Non-operating, malfunctioning, or ineffective Dynamic Brakes. 2) Engine not loading properly. 3) Locomotive exhaust (e.g. excessive black smoke). 4) Battery failure or other starting problems.
K	When you are making your train handling decisions, safety and rules compliance are the first consideration. However, fuel conservation must be a major factor in the train handling method selected.

Train handling practices in conjunction with fuel conservation will be monitored through random event recorder downloads and on the job observations and evaluations of operating officers to ensure that all locomotive engineers are making the proper fuel conservation decisions.

17.1 Check Fuel Level

Locomotive engineers are responsible to check fuel level on locomotives:

- which are set off enroute,
- which are picked up enroute,
- and whenever requested to do so by an RTC or a company supervisor.

This information must be relayed to the RTC immediately.

17.2 Compliance with Train Document Messages

The locomotive engineer and conductor are jointly responsible to ensure that the number of operating locomotives in their consist is in compliance with messages on train documents. When a locomotive has been isolated for fuel conservation, it should remain isolated unless given permission by the RTC to put it back on-the-line.

When enroute changes occur (e.g., locomotives or cars are picked up/set off), determine the appropriate number of operating locomotives and isolate excess locomotives.

Locomotives which are shut down or isolated must be noted on Part 1 of the Crew to Crew Form. When changing off with another crew, if the Crew to Crew Form does not clearly indicate that train document fuel conservation messages are being complied with, then the locomotive consist (excluding remote locomotives) must be inspected and excess locomotives isolated.

17.3 Train Type Consist Header

There are two train types identified by consist header. Locomotive engineer and conductor are jointly responsible to ensure that the train is operated as follows:

Expedited: Train is not limited by speed or throttle restrictions.

Non-Expedited: Maximum speed is limited to 45 MPH when operating in throttle 3 or higher.

Note: These instructions do not supersede CROR, Time Table or GBO restrictions.

17.4 Fuel Conservation Technology

Unless otherwise authorized by the NMC, fuel conservation technologies such as LEADER or Fuel Trip Optimizer when equipped on the lead Locomotive and operational, must be used on Subdivisions identified in Time Table footnote, Operating Bulletin or Special Instruction.

17.5 Diesel Engine Shutdown for Fuel Conservation

A	<p>To conserve fuel, shutdown the diesel engine on locomotives under the following conditions;</p> <ul style="list-style-type: none"> • the ambient temperature is expected to remain at or above 5 degrees Celsius <p>AND</p> <ul style="list-style-type: none"> • it is known the locomotive(s) will be standing for 15 MINUTES or more. (i.e. trains staged on line, trains waiting work blocks, trains waiting crews, locomotive(s) set out on line, locomotives stored at tie-up points, locomotives on shop tracks, etc.)
B	<p>Care and good judgment are to be used to determine if, and when, a diesel engine will be shutdown. When in doubt, contact the Network Management Center (NMC), yardmaster, local shop personnel, or a supervisor for information surrounding the decision to shutdown a locomotive or to leave it idling.</p> <p>Note: Equipment with locomotive(s) attached that will be shut down and unattended, must be left secured as per GOI-2 Section 14, items 1.0 & 3.0. Trains left unattended for less than 15 MINUTES must be secured as required, but the locomotives can remain running.</p> <p>Exceptions (attended or unattended): Locomotives (including remote(s)), equipped with an enabled ZTR Smartstart, Q-tron QEG system or GE AESS system are exempt from the requirement to manually shut down the locomotive(s). Also see Section 15 Item 20.0 for locomotive shut down system operation.</p>
C	<p>Follow the procedures for shutting down a locomotive (GOI Section 15, item 18.0) when it becomes necessary to shutdown a diesel engine.</p>
D	<p>Advise the NMC when locomotives are shutdown enroute and advise yard or terminal staff when locomotives are shutdown in yard areas. In addition, document on a Crew to Crew Form the time locomotives are shutdown in the event the locomotives are left for others.</p>
Continued.....	

E	<p>Follow the procedures for starting a locomotive (GOI Section 15, item 17.0 and 18.0) when it becomes necessary to restart the diesel engine.</p> <p>Note: If the locomotive to be restarted has been shutdown for twenty-four hours or more, to ensure engine protection, contact local shop personnel or the central locomotive specialist for guidance.</p>
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16

APPENDIX 1: Descending Heavy Grade Job Aid

1.0 Purpose

This Job Aid is to provide train handling guidelines while descending grades. All CROR, GOI and Time Table Special Instructions remain in effect.

2.0 Descending Heavy Grades

The following tables list the grades that are heavy grades (1.0 % to 1.8 % for a distance of two miles or more.

Note 1: Those descending grades indicated by the **shaded rows** may require the brake to be set for longer than 10 minutes with a 10 psi brake pipe reduction or more, where time table speeds may be greater than those required by item 4.1 (B).
 Item 4.1 (B) speeds are indicate by either ³⁰ or ³⁵.
Examples: 1.00%³⁵ or 1.30%³⁰

Note 2: Each table lists the descending grades where ALL items apply and those where all except item 4.1 (B) applies.

Vancouver Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY			
Cascade	MP 40.6 – 42.7	1.30% ³⁰	Westward

BC Interior Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Fording River	MP 33.5 - 31.3	1.80%	Southward
Fording River	MP 30.3 - 27.0	1.70%	Southward
Fording River	MP 20.9 - 12.7	1.80%	Southward
Fording River	MP 11.6 - 8.5	1.80%	Southward
Byron Creek	MP 10.9 - 0.0*	1.70%*	Northward
* Note: MP 11.4 - 10.9% is 2%			
Cranbrook	MP 1.8 - 17.7	1.20%	Westward
Cranbrook	MP 54.4 - 60.2	1.00%	Westward
Cranbrook	MP 63.6 - 67.3	1.00%	Westward
Cranbrook	MP 105.2 - 95.5	1.00%	Eastward
Mountain	MP 1.5 - 7.0	1.10%	Westward
Mountain	MP 21.2 - 24.7	1.10%	Westward
Mountain	MP 31.3 - 34.5	1.20%	Westward
Mountain – MacDonald Track	MP 77.0 - 68.3	1.00%	Eastward
Mountain – Connaught Track	MP 84.9 - 79.3	1.00%	Eastward
Mountain	MP 93.9 - 95.9	1.80%	Westward
Mountain	MP 98.9 - 101.8	1.80%	Westward
Mountain	MP 106.6 - 110.0	1.20%	Westward
Mountain	MP 113.8 - 119.8	1.20%	Westward
Mountain	MP 122.5 - 125.5	1.20%	Westward
Boundary	MP 8.9 - 14.2	1.30%	Westward
Rossland	MP 18.2 - 14.6	1.40%	Northward
Shuswap North Track	MP 5.0 - 1.9	1.40%	Eastward
Shuswap South Track	MP 6.1 - 1.9	1.00%	Eastward
Shuswap	MP 9.5 - 12.5	1.10%	Westward
Shuswap	MP 15.1-20.1	1.50%	Westward
Shuswap	MP 21.2 - 24.3	1.00%	Westward
Shuswap North Track	MP 79.4 - 70.9	1.00%	Eastward
Shuswap South Track	MP 79.4 - 70.9	1.60%	Eastward
Shuswap	MP 79.4 - 89.9	1.10%	Westward

Alberta Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY			
Crowsnest	MP 86.0 - 84.0	1.80% ³⁰	Eastward
Crowsnest	MP 78.0 - 75.0	1.10% ³⁵	Eastward
Crowsnest	MP 70.2 - 65.5	1.30% ³⁰	Eastward
Crowsnest	MP 62.0 - 58.5	1.40% ³⁰	Eastward
Laggan	MP 34.0 - 27.5	1.00% ³⁵	Eastward
Red Deer	MP 29.2 - 32.5	1.20% ³⁵	Northward
Maple Creek	MP 141.0 - 146.0	1.30% ³⁰	Westward
Brooks	MP 5.4 - 0.3	1.30% ³⁰	Eastward
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Pecten	MP 20.0 - 16.0	1.50%	Northward
Pecten	MP 12.0 - 7.9	1.50%	Northward
Pecten	MP 5.5 - 1.3	1.50%	Northward
Laggan South Track	MP 122.3 - 117.3	1.80%	Eastward
Laggan North Track	MP 122.3 - 116.0	1.00%	Eastward
Shantz	MP 12.7 - 9.3*	1.80%	Eastward
* Note: portions between MP 12.7 - 9.3 are 2.00%			
Shantz	MP 7.2 - 9.2	1.50%	Westward
Shantz	MP 5.8 - 3.2	1.70%	Eastward
Wetaskiwin	MP 84.0 - 86.0	1.13%	Westward
Wetaskiwin	MP 90.5 - 87.5	1.03%	Eastward

Saskatchewan Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY			
Indian Head	MP 79.0 - 83.0	1.00% ³⁵	Westward
Weyburn	MP 152.0 - 149.2	1.00% ³⁵	Northward
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Expanse	MP 21.0 - 25.3	1.00%	Southward
Hardisty	MP 126.5 - 130.5	1.00%	Westward
Lloydminster	MP 66.8 - 73.9	1.00%	Northward
Lloydminster	MP 80.0 - 74.0	1.00%	Southward
Radville	MP 84.6 - 81.4	1.30%	Eastward

Manitoba Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY			
Minnedosa	MP 74.0 - 64.6	1.43% ³⁰	Eastward
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Bredenbury	MP 3.6 - 0.0*	1.61 %*	Eastward
* Note: between mile 2.6 and 1.9 the grade is 2%			
Bredenbury	MP 53.0 - 56.0	1.13%	Westward
Bredenbury	MP 58.5 - 56.0	1.27%	Eastward
Bredenbury	MP 76.0 - 84.5	1.32%	Westward
Bredenbury	MP 89.0 - 84.5	1.38%	Eastward
Minnedosa	MP 75.5 - 77.5	1.33%	Westward

Northern Ontario Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY			
Nemegos	MP 4.6 - 6.9	1.10% ³⁵	Westward
Nemegos	MP 98.5 - 100.8	1.20% ³⁵	Westward
White River	MP 12.2 - 15.2	1.20% ³⁵	Westward
White River	MP 74.0 - 70.4	1.10% ³⁵	Eastward
White River	MP 96.6 - 93.7	1.10% ³⁵	Eastward
Heron Bay	MP 77.5 - 74.4	1.35% ³⁰	Eastward
Heron Bay	MP 77.6 - 81.0	1.40% ³⁰	Westward
Heron Bay	MP 109.0 - 105.4	1.38% ³⁰	Eastward
Nipigon	MP 1.8 - 9.0	1.68% ³⁰	Westward
Nipigon	MP 101.1 - 94.7	1.40% ³⁰	Eastward
Kaministiquia	MP 16.0 - 8.58	1.26% ³⁵	Eastward
Kaministiquia	MP 39.8 - 33.0*	1.11% ³⁵	Eastward
* Note: For information only, mile 38.90 to 38.71 is 1.42 %			
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Nemegos	MP 12.1 - 14.3	1.20%	Westward
White River	MP 36.3 - 40.7	1.10%	Westward

Southern Ontario Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY			
MacTier	MP 39.0 - 41.0	1.25% ³⁵	Northward
MacTier	MP 21.0 - 10.0	1.00% ³⁵	Southward
Galt	MP 74.2 - 71.2	1.00% ³⁵	Eastward
Galt	MP 39.0 - 32.8	1.06% ³⁵	Eastward
Galt	MP 24.5 - 20.6	1.00% ³⁵	Eastward
Cartier	MP 83.6 - 85.6	1.15% ³⁵	Westward
Windsor	MP 3.0 - 1.0	1.07% ³⁵	Eastward
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Hamilton	MP 46.7 - 52.5	1.04%	Northward
Havelock	MP 177.0 - 173.4	1.00%	Eastward
Havelock	MP 172.2 - 166.3	1.00%	Eastward
Havelock	MP 140.1 - 127.5	1.10%	Eastward
Belleville	MP 200.5 - 203.8	1.14%	Westward
Belleville	MP 206.4 - 209.1	1.75%	Westward
Nephton	MP 19.5 - 17.0	1.25%	Southward
Nephton	MP 14.7 - 12.7	1.50%	Southward
Nephton	MP 8.6 - 6.6	1.80%	Southward
Nephton	MP 8.6 - 11.0	1.22%	Northward

Montreal Service Area			
Subdivision	Location	Max. Grade	Train Direction
ITEMS 3.0 TO 8.0 APPLY, EXCEPT ITEM 4.1 (B)			
Adirondack Outremont Spur.	MP 4.0 - 1.5	1.58%	Southward

3.0 Emergency Brake Application Required

Any train moving on a descending grade listed in Item 2.0, that attains a speed 5 MPH above permissible speed is considered an uncontrolled movement. An EMERGENCY brake application must be made.

Three immediate actions are required:

- 1 - the conductor must fully open the conductor's emergency valve
- 2 - the locomotive engineer must place the automatic brake valve handle in emergency position.
- 3 - the TIBS emergency brake feature must be activated. (Not applicable to trains without TIBS)

4.0 Train Handling Guidelines

Note 1: Wherein this Job Aid it states "rear car BP pressure", it also refers to Tail End Remote locomotive BP pressure.

Note 2: The Automatic Brake, false gradient and cycle brake principles for tail end remote operated trains as instructed in GOI Section 17, item 4.0 apply.

The following guidelines apply when cresting and descending a hill under normal operation.

4.1 Special Restrictions: Heavy Trains

Trains with a Weight per Operative Brake exceeding 100 tons must:

- A - crest the hill and balance train speed at least 5 MPH below permissible speed until braking is seen to be ample.
- B - NOT exceed the following speeds while the lead locomotive is between the mileage locations indicated by the shaded rows in item 2.0.
 - 35 MPH on grades 1.0% to 1.29%
 - 30 MPH on grades 1.3% to 1.8%

4.2 With Dynamic Brake

Step	Action
1	Crest the hill and gradually reduce the throttle to balance train speed below permissible speed.
2	Gradually move throttle to IDLE.
3	After 10 seconds, move dynamic brake handle to SET UP.
4	Advance dynamic slowly to bunch slack.
5	Control train speed by modulating dynamic brake handle to increase or decrease dynamic brake force.

4.3 With Dynamic & Train Air Brake

Step	Action
1	Crest the hill and gradually reduce the throttle to balance train speed below permissible speed.
2	If it is known train air will be needed to supplement dynamic brake, make a minimum brake pipe reduction as the train crests the hill.
3	Check head-end display unit (TIBS) and observe brake pipe reduction at rear of train. (Not applicable to trains without TIBS)
4	Move throttle to IDLE.
5	Wait 10 seconds, place dynamic brake handle to SET-UP.
6	Slowly advance the dynamic brake handle to control train speed down the hill.
7	If necessary, make additional brake pipe reductions in 2-3 psi increments as the entire train moves onto the hill.

4.4 Without Dynamic Brake

Step	Action
1	Crest the hill and gradually reduce the throttle to balance train speed below permissible speed.
2	Reduce throttle to the 4 th notch or lower.
3	Make a minimum brake pipe reduction while the rear portion of the train is approaching the crest of the hill.
4	Check head-end display unit (TIBS) and observe brake pipe reduction at rear of train.
5	Balance train speed with throttle.
6	If necessary, make additional brake pipe reductions in 2-3 psi increments as the entire train moves onto the hill.
7	Continue to balance train speed down the hill with the throttle.

WARNING: If brake pipe at rear of train does not reduce it may be an indication of a blockage in the brake pipe or a closed angle cock. Stop train immediately. If necessary place the automatic brake into emergency activate the TIBS Emergency Brake Feature (if applicable) and open the Conductor's emergency brake valve.

5.0 Movement After Emergency Application

Caution: Job Briefing Required

- Before the Emergency PCS is recovered, the locomotive engineer must initiate a discussion with the conductor as regards the need for hand brakes and/or retainers. They must consider train location, amount of train on grade, proximity of lesser grade, weather, rail or any other condition that may affect train braking.
- When agreement cannot be reached, the crew must contact a road manager and be governed by his/her instructions.
- Reference must be made to applicable Emergency PCS recovery instructions 9.0 to 13.0 of this job aid.

6.0 Use of Retaining Valves

Retaining valves will be used under the following conditions:

If ... the train is standing on a grade listed in item 2.0 and;

- it is the second emergency brake application on the grade, and;
- locomotive brakes are not sufficient to prevent train movement;

Then... do not attempt to recover the emergency PCS until retaining valves or hand brakes are set as follows:

- 1 - on grades listed that are 1.3% to 1.8%, set retainer valves to the high pressure (HP) position on at least 50% of the loaded cars and on grades listed that are 1.0% to 1.29%, set HP retainers on at least 25% of the loaded cars.

Note: Whenever a train is moved with HP retainers applied, do not exceed 20 MPH. In addition, the train must be stopped every 20 minutes for a period of 10 minutes in order to allow the wheels and brake shoes time to cool off.

OR

- 2 - on grades listed that are 1.3% to 1.8%, apply handbrake on at least 50% of the loaded cars and on grades listed that are 1.0% to 1.29%, apply hand brakes on at least 25% of the loaded cars. The handbrakes must not be released until after the train air brake system is fully charged.

Note: This does not alter the requirements to apply hand brakes or retainers when conditions are such that their use is considered necessary after one emergency brake application.

7.0 Who to Contact

If train goes into emergency from any source while descending any of the grades listed in item 2.0 and the locomotive engineer is not confident he/she can move the train safely, they must contact the RTC and request to speak directly to a road manager.

8.0 Moving from a Planned Stop on a Heavy or Mountain Grade: Conventional or Distr Pwr Train

Note: Heavy grades are 1.0% to 1.8%. (See Item 2.0)
Mountain grades are greater than 1.8% (See Time Tables for specific instructions)

Important: On Distr Pwr trains, ensure all remotes are in MU, the "Front" group.

Step	Switch / Part	Setting
1	a) Independent Brake	FULLY APPLIED
	b) Reverser	FORWARD
	c) Automatic Brake (AB)	RELEASE
	d) Dynamic Brake	DB #8
2	When train starts to move	
	<p>For GM (except SD90MAC) Locomotives RELEASE* independent gradually as DB increases (*if DB equipped and working)</p> <p>For GE and SD90MAC Locomotives FULLY RELEASE* independent (*if DB working)</p>	
3	<p>Monitor speed and rear car BP pressure. On HEAVY grades, if train is accelerating in DB #8, prior to exceeding 50% of permitted speed;</p> <p>OR</p> <p>On MOUNTAIN grades, prior to exceeding 5 MPH;</p>	
	Action	
	a) Automatic Brake / Equalizing Reservoir	REDUCE 7 psi below rear Car BP pressure
<i>IF speed still increasing;</i>		
b) Automatic Brake	APPLY 2 psi supplements until grade is balanced and speed held within permissible limits	

9.0 Emergency PCS Recovery: Conventional Train

Step	Switch / Part	Setting
1	a) Independent Brake	FULLY APPLIED
	b) Retainers	SET as required
	c) Reverser	NEUTRAL
	d) Throttle	IDLE
	e) Dynamic Brake	IDLE
2	a) Reverser	FORWARD
	b) Automatic Brake	EMERGENCY
Wait 60 Seconds		
2	c) Automatic Brake	Briefly return to HANDLE OFF, then RELEASE
	<i>Ensure PCS indication is extinguished and brake pipe pressure is recharging normally</i>	
2	d) Dynamic Brake	DB # 8
	3 When train starts to move	
<p>For GM (except SD90MAC) locomotives RELEASE* independent gradually as DB increases (*if DB equipped and working).</p> <p>For GE and SD90MAC locomotives FULLY RELEASE* independent (*if DB working).</p>		
4	<p>Monitor speed and rear car BP pressure. On HEAVY grades, if train is accelerating in DB #8, prior to exceeding 50% of permitted speed;</p> <p>OR</p> <p>On MOUNTAIN grades, prior to exceeding 5 MPH;</p>	
	Action	
4	a) Automatic Brake / Equalizing Reservoir.	REDUCE 7 psi below rear car BP pressure
	<i>IF speed is still increasing;</i>	
4	b) Automatic Brake	APPLY 2 psi supplements until grade is balanced and speed held within permissible limits

**10.0 Emergency PCS Recovery:
Locotrol IV Leading Locomotives**

Step	Switch / Part	Setting	
1	a) Independent Brake	FULLY APPLIED	
	b) Retainers	SET as required,	
	c) Reverser	NEUTRAL	
	d) Throttle	IDLE	
	e) Dynamic Brake	IDLE	
	f) Reverser	FORWARD	
	g) Automatic Brake (AB)	EMERGENCY	
	Wait 60 seconds		
2	IF Locotrol IS NOT in "Run Mode," then;		
	a) MODE	PRESS	
	b) RUN	PRESS	
	c) EXECUTE	PRESS	
	d) MAIN	PRESS	
	<i>Ensure each remote is in the FRONT GROUP</i>		
3	Select each remote one at a time, press NORMAL, press EXECUTE.		
	IF IFD/ICE Indicates "Go To Release," then;		
	a) Automatic Brake	Briefly return to HANDLE OFF, Then RELEASE	
	Ensure the following results:		
	b) PCS indicator on lead and PC indicator on each remote	EXTINGUISHED	
	c) Each remote	CHARGING	
	d) Rear car BP Pressure	AIR RISING and RECHARGING normally	
	e) Dynamic Brake	DB #8	
	Continue on next column...		

Step	Switch / Part	Setting
4	When train starts to move;	
	a) Independent	FULLY RELEASE (if DB working)
	<i>Monitor speed and rear car BP pressure. Then, on HEAVY grades, prior to exceeding 50% of maximum permitted speed;</i>	
	OR <i>on MOUNTAIN grades, prior to exceeding 5 MPH:</i>	
		Action
	b) Automatic Brake / Equalizing Res	REDUCE 7 psi below rear car BP pressure
	<i>IF speed still increasing;</i>	
	c) Automatic Brake	APPLY 2 psi supplements until grade is balanced and speed held within permissible limits

16

**11.0 Emergency PCS Recovery:
Locotrol LEB Leading Locomotives**

Step	Switch / Part	Setting
1	a) Independent Brake	FULLY APPLIED
	b) Retainers	SET as required
	c) Reverser	NEUTRAL
	d) Throttle	IDLE
	e) Dynamic Brake	IDLE
	f) Reverser	FORWARD
	g) Automatic Brake (AB)	EMERGENCY
	Wait 60 seconds	
If Locotrol is in "Run mode, go to Step 3		
2	IF Locotrol IS NOT in "Run Mode," then;	
	a) DISTR POWER (IF DISPLAYED)	PRESS
	b) DP MAIN	PRESS
	c) MODE	PRESS
	d) EEXECUTE	PRESS
	e) EXIT	PRESS
3	If all remote locomotives are in the FRONT GROUP, go to Step 4 . If not, press MOVE TO FRONT, press MORE MENU (if displayed).	
4	Press REMOTE MENU (if displayed). Select each remote one at a time, press NORMAL, press EXECUTE.	
	IF IFD/ICE Indicates "Go To Release," then;	
	a) Automatic Brake	Briefly return to HANDLE OFF, then SUPPRESSION, then RELEASE
	Ensure the following results:	
	b) PCS indicator on lead and PC indicator on each remote	EXTINGUISHED
	c) Each remote	Displays a value of flow CHARGING
	d) Rear car BP Pressure	AIR RISING and RECHARGING normally
e) Dynamic Brake	DB #8	
Continue on next column...		

Step	Switch / Part	Setting
5	When train starts to move;	
	a) Independent	FULLY RELEASE (if DB working)
	<i>Monitor speed and rear car BP pressure. Then, on HEAVY grades, prior to exceeding 50% of maximum permitted speed;</i>	
	OR <i>on MOUNTAIN grades, prior to exceeding 5 MPH:</i>	
		Action
b)	Automatic Brake / Equalizing Res	REDUCE 7 psi below rear car BP pressure
IF speed still increasing;		
c)	Automatic Brake	APPLY 2 psi supplements until grade is balanced and speed held within permissible limits

12.0 Locotrol IV Communication Loss With Train in Emergency

IF Locotrol communication is lost with one or more remotes **AND IF** train is in emergency, then Locotrol must be shut down as per the following:

- Secure the train with hand brakes and on LOADED bulk trains,
- On **HEAVY** grades apply 50% retainers
- On **MOUNTAIN** grades apply 100% retainers

Locotrol IV Shut Down

Note: Shut down Locotrol on the lead unit first, then remote units last.

On Lead Locomotive

Step	Switch / Part	Setting
1	SYSTEM Switch	PRESS
	UNLINK Switch	PRESS
	EXECUTE Switch	PRESS
2	System Module Panel (in nose)	
	Thumbwheels	0000
3	Toggle Switches	
	Locotrol/Conventional	CONVENTIONAL
	Lead/Remote	No Change
	Same/Lead or Opposite	No Change
4	Circuit Breakers	
	RELAY	OFF
	ELECT	OFF
	RADIO	OFF
5	Engine Control Panel (in cab)	
	GE's Distributed Power	
	Circuit Breaker	OFF
	GM's Locotrol Circuit Breaker	OFF
Ensure AB handle is in EMERGENCY		

On Each Locotrol IV Remote Locomotive

Step	Switch / Part	Setting
1	System Module Panel (in nose)	
	Thumbwheels	0000
	Toggle Switches	
	Locotrol/Conventional	CONVENTIONAL
	Lead/Remote	No Change
	Same/Lead or Opposite	No Change
	Circuit Breakers	
	RELAY	OFF
	ELECT	OFF
	RADIO	OFF
	Engine Control Panel (in cab)	
	GE's Distributed Power	
	Circuit Breaker	OFF
GM's Locotrol Circuit Breaker	OFF	
Control Stand		
Engine Run Switch	ON	
2	Caution: DO NOT move AB to release in this procedure	
	Automatic Brake (AB)	EMERGENCY for 60 seconds
	AB	HANDLE OFF
	Ensure PCS is EXTINGUISHED	
	Independent	RELEASE
3	IFD Screen	
	Any F Key	TOUCH to turn on screen
	Operator Function	SELECT
	Air Brake Setup	SELECT
	IND Brake Lead/Trail	TRAIL
	AB Result	CUT-OUT
	Save Setup	SELECT & CONFIRM
4	Ensure IND Brake is in TRAIL and AB is CUT- OUT	
	Locomotives	ISOLATE
	Brake Cylinders (on each truck)	CUT-OUT

Repeat all the above steps on each remote unit On each Locotrol LEB Remote Unit, refer to Item 13.0 of this job aid.

This completes the Locotrol Shutdown Procedure. The train is now conventional and emergency PCS may be recovered on lead locomotive.

Caution: You must cut-IN the air brakes on each set of trucks when remote unit(s) are remarshalled to the head end or Locotrol is subsequently powered up again.

13.0 Locotrol LEB Communication Loss With Train in Emergency

IF Locotrol communication is lost with one or more remotes **AND IF** train is in emergency, then Locotrol must be shut down as per the following:

- Secure the train with hand brakes and on LOADED bulk trains,
- On **HEAVY** grades apply 50% retainers
- On **MOUNTAIN** grades apply 100% retainers

Locotrol LEB Shut Down

Note: Shutdown Locotrol on the lead unit first, then remote units last.

On LEAD Locomotive

Step	Switch/Part	Setting
1	On locomotive screen	press DISTR POWER (if displayed) press DP MAIN press SYSTEM
2	Press UNLINK	Press EXECUTE
3	Press END DISTR PWR	press EXECUTE
4	Circuit Breakers in nose: DISTRIBUTED POWER RADIO	 OFF
	DISTRIBUTED POWER TRAINLINE	OFF
5	CEFX 100-139 and CP 9300 - 9303 - Circuit Breakers are in the electrical cabinet: D. Pwr Radio - EAB/DP - leave	 OFF ON
6	Ensure AB handle is in EMERGENCY	

On each Locotrol LEB Remote Locomotive

Step	Switch/Part	Setting
1	DISTR POWER END DISTR PWR EXECUTE	Press Press Press
Ensure "DP ON", or "DP REMOTE ENABLED" indicator is out.		
2	Circuit Breakers in nose: DISTRIBUTED POWER RADIO DISTRIBUTED POWER TRAINLINE	 OFF OFF
3	CEFX 100-139 and CP 9300 - 9303 - Circuit Breakers are in the electrical cabinet: D. Pwr Radio - EAB/DB - leave	 OFF ON
4	Control Stand Engine Run Switch	 ON
CAUTION: DO NOT move AB to release in this procedure.		
	Automatic Brake (AB) AB	EMERGENCY for 60 seconds HANDLE OFF
Ensure PCS is EXTINGUISHED		
	Independent	RELEASE
5	IFD Screen Operator function (if displayed) Air Brake Setup IND Brake Lead/Trail AB Result Save Setup	 SELECT SELECT TRAIL CUTOUT SELECT & CONFIRM
6	Ensure IND Brake is in TRAIL and Auto Brk is CUT OUT Locomotives	 ISOLATE
7	Brake Cylinders (on each Truck)	CUT-OUT
Repeat all the above steps on each remote unit. On each Locotrol IV remote unit, refer to item 12.0 of this job aid.		
8	This completes the Locotrol Shutdown Procedure. The train is now conventional and emergency PCS may be recovered on lead locomotive.	
Caution: You must cut-IN the air brakes on each set of trucks when the remote unit is marshalled to the head end or Locotrol is subsequently powered up again.		

APPENDIX 2: Pacing Chart

Delay Time Minutes	4	10	15	20	25	30	35	40	45	50	55	60
Miles from Delay Point	SPEED REQUIRED IN MPH											
4 Miles	60	24	16	12	10	8	7	6	-	-	-	-
5 Miles	75	30	20	15	12	10	9	8	7	6	-	-
6 Miles	90	36	24	18	14	12	10	9	8	7	6	6
7 Miles	-	42	28	21	17	14	12	10	9	9	8	7
8 Miles	-	48	32	24	19	16	14	12	11	10	9	8
9 Miles	-	54	36	27	22	18	15	13	12	11	10	9
10 Miles	-	60	40	30	24	20	17	15	13	12	11	10
15 Miles	-	-	60	45	36	30	26	22	20	18	16	15
20 Miles	-	-	-	60	48	(40)	34	30	27	24	22	20
25 Miles	-	-	-	-	60	50	43	38	33	30	27	25
30 Miles	-	-	-	-	72	60	51	45	40	36	33	30
35 Miles	-	-	-	-	-	70	60	52	47	42	38	35
40 Miles	-	-	-	-	-	-	69	60	53	48	44	40
45 Miles	-	-	-	-	-	-	-	68	60	54	49	45
50 Miles	-	-	-	-	-	-	-	-	67	60	54	50

Example: You are informed by the RTC that you will be delayed for 30 minutes at a location 20 miles from your present location. If your permissible speed is over 40 MPH, reduce to 40 MPH to pace your movement. See circle in table.

Section 17

Distributed Power

TABLE OF CONTENTS

Distributed Power Operations	234
1.0 Introduction	234
General Instructions	236
2.0 Locotrol - Restrictions	236
3.0 Remote Independent Application and Release	237
4.0 Automatic Brake	237
5.0 Remote(s) Communication	239
6.0 Controlled Tractive Effort feature (CTE Mode) on ES4400AC Locomotives	241
Locotrol Startup and Shut Down	242
7.0 Preparing Locotrol Equipment for Service	242
8.0 Shutting Down Locotrol (Unlinking).....	247
9.0 Changing Ends	249
LOCOTROL OPERATION	253
Front Group and Back Group	253
10.0 MU Operation (Front Group).....	253
11.0 Independent Motoring (Back Group).....	253
Brake Tests	254
12.0 Train Air Brake Test.....	254
13.0 Brake Pipe Continuity - IMPORTANT (as per GOI Sec 13 item 9.3)	257
Coupling/Uncoupling and Break-in-Two.....	258
14.0 Coupling Lead and Remote Locomotives (with/without cars)	258
15.0 Uncoupling Lead and Remote Locomotives (with/without cars).....	259
16.0 Break-in-Two	259
Emergency and Penalty (PCS) Brake Application Recovery	260
17.0 Emergency and Penalty (PCS) Brake Application Recovery	260
Locomotives or Trains Being Left Unattended	261
18.0 Locomotives or Trains Being Left Unattended	261
Loading and Unloading.....	262
19.0 Tower Control - Roberts Bank Instructions	262
20.0 Slow Speed Control	263
Alarms and Displays.....	266
21.0 Audible Alarms – Locotrol IV and LEB	266
22.0 Alarm Displays – Locotrol IV (appropriate remotes will be indicated on console)	266
23.0 Data Display Panel – Locotrol IV (appropriate remotes will be indicated on console)	267
24.0 Alarm Displays – LEB	267

Distributed Power Operations

1.0 Introduction

Distributed power systems are designed to provide synchronous or independent control of one to four locomotives located at points along the train used in addition to the lead unit. The system provides control of the remote(s) by command signals transmitted over a radio link.

NOTE: Throughout this GOI section, **WARNINGS** and **CAUTIONS** are highlighted with grey shading.

1.1 Distributed Power Types

CPR locomotives utilize two kinds of Locotrol:

	GE (AC4400's)	EMD (SD90MAC's)
IV	CP 9500 - 9582 (CP1) CP 9583 - 9683 (CP2)	CP 9100 - 9160
LEB	CP 8500 - 8580 (CP3) CP 8600 - 8655 (CP4) CP 9700 - 9740 (CP5) CP 9750 - 9784 (CP6) CP 9800 - 9840 (CP7) CEFX 1026 -1059	
Note: The CP 9700 – 9714 are equipped with UP – LEB software and therefore do not have Box Car mode or Slow Speed.		
	GE (ES44AC's)	
LEB	CP 8700 - 8759 (CP8) CP 8760 - 8859 (CP9) CP 8860 - 8889 (CP10)	
LEB & ECP	CP 8890 - 8899 (CP10) *These locomotives are equipped for dual mode.	

The instructions in this section are written for inter-operability (i.e., Locotrol IV used with Locotrol LEB remote(s), vice versa, or in any combination of lead and remotes).

CP UHF Radio equipped locomotives will link to BNSF or UP remote locomotives. Also BNSF and UP Locotrol units will be able to link to CP UHF Radio equipped remote locomotives. There is an entry on the lead set up screen to select the initials of the remote unit. The default initials are CPR.

1.2 Abbreviations

AB	Automatic Brake
BP	Brake Pipe
C Brk	Circuit Breaker
IB	Independent Brake
DP	Distributed Power (Distr Pwr)
DP Screen	Distributed Power Operations Screen (Locotrol LEB)
Remote	Remote locomotive consist

1.3 Displaying DP Screen (Locotrol LEB)

In these instructions, the term "DP Screen" refers to the Distributed Power Operations screen; the term "locomotive screen" refers to the screen which normally displays the speedometer, tractive effort, etc. Sometimes the terms right or left screen are also used.

It is possible on these units to select a COMBINED screen that displays abbreviated remote unit information. The main purpose of the COMBINED screen is when one display screen has failed. The COMBINED screen displays remote unit throttle/DB level, tractive effort, brake pressure and air flow. To change from the COMBINED screen to the full REMOTE screen requires the locomotive to be stopped with the reverser centered and independent brake fully applied.

To set up the standard remote operations screen, select DISTR POWER key on one display (left or right), then select the DP MAIN MENU key and then on the other display select the DISTR POWER key and then the DPC CONTROL key. The DISTRIBUTED POWER OPERATIONS SCREEN will be displayed. It shows remote unit throttle/DB level, tractive effort, BP pressure, air flow, remote mode, ER pressure, BC pressure and main reservoir. Use the other display for Locotrol mode functions or other locomotive information or functions as required. Keep the display for DISTRIBUTED POWER OPERATIONS only for Locotrol information, otherwise if you get the combined screen in error and then you need to stop to get back to the DISTRIBUTED POWER OPERATIONS SCREEN.

1.4 Territory Specific Information

a) Between Alyth and Revelstoke

Distributed Power Trains - Marshalling the Remote locomotive(s)

Between Alyth and Revelstoke, whenever practicable, no more than 3100 feet should separate the remote locomotive consist from the lead locomotive consist.

This means that:

- If the cars are approximately 59 feet long, marshal the remote locomotive consist no more than 52 cars from the lead locomotive consist.
- If the cars are approximately 53 feet long, marshal the remote locomotive consist no more than 57 cars from the lead locomotive consist.

On trains with multiple remotes, the 3100 foot restriction does not apply.

b) Mountain Subdivision

CAUTION - On the Mountain Subdivision, when a westward train has been marshalled with one remote locomotive consist more than 3100 feet from the leading locomotive consist, advise the RTC before leaving KC Junction. The RTC should then avoid stopping the train at Bear Creek.

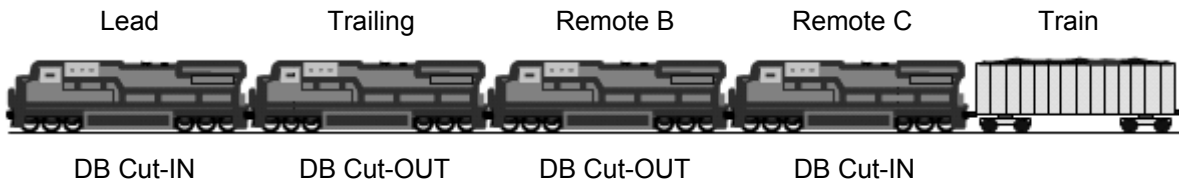
General Instructions

2.0 Locotrol - Restrictions

- a) **All locomotives on the head end** - In certain situations, it may be necessary to operate Locotrol equipped locomotives (with Locotrol equipment powered up) that are normally positioned at a mid-train location, as part of the lead locomotive consist.

With all locomotives located on the head end, it is very important to ensure that available dynamic brake does not exceed a factor of 20. Refer to GOI Section 16, item 7.1.

EXAMPLE: With 4 GE AC4400 locomotives on head end.



Only the brake pipe hose will be coupled between the remote consist(s) and the lead consist. **The jumper cable must not** be connected between the lead and remote consists.

All operating instructions for Locotrol apply. These trains must be considered as Locotrol equipped with the exception that no cars separate the lead and remote consists. The train must be operated with all Remote Brake Valves OUT.

NOTE: On distributed power trains, the DB factor of the head end consist and the DB factor of the remote consist must each not exceed 20 under any circumstances.

- b) **Remote Locomotive Operating Restrictions – Mixed Locotrol Trains ONLY** (as defined in Section 7, item 2.3)

Independent Motoring (Back Group)

- i) When the remote locomotive(s) is in independent motoring (back group), use the same throttle position as the lead locomotive consist, or a lower throttle position than the lead locomotive consist.
EXCEPTION: When lifting a heavy train on an ascending grade the throttle position of the remote(s) may be higher than the lead locomotive consist. Pay close attention to keep in-train forces at an acceptable level.
- ii) When the lead consist is in dynamic brake, do not use the remote locomotive(s) in throttle position.

Restrictions when Moving Backward

When moving backward on mixed trains, Section 16, Item 8.0 applies.

Crews are reminded of the provisions of Section 16, Item 8.2 wherein it states 35 cars, this means 35 cars or platforms.

3.0 Remote Independent Application and Release

When the independent brake handle is moved to the desired position, the command will be sent to the remote(s) and acted on providing the remote(s) is in one of the following modes:

NORMAL, IDLE, BV OUT, ISOLATE, SPEED or STOP / SHTDN / ENGINE S/D.

NOTE: If REMOTE, S/O (Set OUT), EXECUTE are pressed, then remote(s) independent brake is automatically set to maximum (72 psi).

4.0 Automatic Brake

4.1 False gradient brake applications

- a) Except in paragraph b) below, in distributed power operation, the sound of the service exhaust **must not** be used to measure a service reduction. If necessary to apply the brakes with the train brake system not fully charged, the rear car BP pressure must be known, then make an automatic brake application as per GOI Section 16 item 3.2 a) (e.g., 7 psi below the reading on the rear car) or as per GOI Section 16 item 3.2 c) (e.g., determine the amount of false gradient etc.).
- b) If there is only one remote and if it is on the extreme rear of the train, the sound of the service exhaust can be used to measure a service reduction. If necessary to apply the brake with the train air brake system not fully charged, using the equalizing reservoir gauge, measure at a least a 7 psi reduction from the point where the service exhaust starts to blow.
- c) If there is more than one remote and if one remote is on the extreme rear of the train, and it is necessary to apply the brake with the train air brake system not fully charged, an equalizing reservoir reduction of at least 5 psi more than the last reduction must be made.

Example: Immediately prior to release, there was a 10 psi reduction in effect. To comply with this instruction make a 15 psi straight away reduction.

- d) On trains equipped with TIBS, if the display unit fails to display BP pressure and it is necessary to apply the brake with the train air brake system not fully charged, an equalizing reservoir reduction of at least 5 psi more than the last reduction must be made.

Example: Immediately prior to release, there was a 10 psi reduction in effect. To comply with this instruction make a 15 psi straight away reduction.

4.2 Air Flow Indicators

- a) When operating with the remote brake valve(s) IN (charging), the lead locomotive air flow indicator does not indicate the true state of charge in the entire train air brake system. The sum of the lead and remote air flow indicators can be used to indicate the true state of charge of the entire train air brake system.
- b) When recharging with one or more of the remote brake valve(s) IN (charging), if insufficient recharge time has elapsed prior to making an air brake application, there will be a false gradient condition between the rear car and the remote ahead of the rear car. If the remote brake valve(s) are OUT and the entire system was recharged with the remote brake valves OUT, then the Air Flow Indicator does give a true indication.

4.3 Low BP Feature

Should BP pressure be reduced to less than 45 psi, the low BP feature causes an emergency brake application, unless the reverser handle is centered and the independent brake is fully applied.

4.4 Cycle-braking on trains with remote located at extreme rear

IF - the automatic brake valve is moved to the Full Service position during service brake operation and

IF - any additional brake pipe reduction must be made to control train speed,

THEN - the train must be stopped (e.g., immediately make an additional 10 psi reduction or if needed, an emergency brake application) . The brake system must be recharged. If the locomotive brakes will not prevent train movement while recharging, then high pressure (HP) retainers must be applied. The correct percentage of retainers is:

- on heavy grades of 1.0% to 1.29% apply HP retainers on 25 % of loaded cars
- on heavy grades of 1.3% to 1.8% apply HP retainers on 50% of loaded cars
- on mountain grades apply HP retainers on at least 65 % of loaded cars.

NOTE: Handbrakes may be required to recharge the air brake system.

5.0 Remote(s) Communication

NOTE: The lead locomotive can lose radio communication with one or more remotes. For example, if communication is lost between the lead locomotive and remote C, then all other remotes (B, D & E) will still function normally because they still have communication with the lead locomotive. Remotes do not communicate with each other and do not “know” that the lead locomotive has lost communication with another remote.

5.1 COMM - This indicator is illuminated if communication between the lead and a remote(s) is interrupted. The lead locomotive will declare a communication interrupt 45 seconds after the last successful check or 10 seconds after an unsuccessful automatic brake application message.

5.2 What happens to the remote(s) when communication is lost with lead locomotive?

- a) In a state of communication loss, the remote(s) assume a state of AUTOMATIC OVERRIDE and will remain in the state of motoring or dynamic braking that existed just prior to the loss of radio contact.
- b) On CP & UP Units, Automatic Override is NULLIFIED if the remote brake valve is OUT, in which case the remote(s) will return to IDLE from MOTORING; however they will retain DYNAMIC BRAKE (even with the remote brake valve OUT). N/A on BNSF units, they will return to idle only.
- c) In order to drop OUT a remote brake valve(s) when operating in a state of COMM loss, make an initial automatic brake application of at least 20 psi. If brake is already set, make an additional brake application of at least 20 psi. This 20 psi reduction must be a “straight-away” reduction, not a split reduction. When the service exhaust stops blowing, the remote brake valve is OUT and automatic override is nullified. This procedure is known as “Comm Loss Idle Down” (CLID).

WARNING: Making a 20 psi reduction to drop out a remote brake valve(s) so that the remote(s) will go to IDLE is not a fail safe procedure. This is because the remote(s) has to detect a significant change in BP charging flow rates and this detection is difficult if;

- the train brake had just been released prior to the loss of communication OR
- if there is significant BP leakage OR
- if a brake application of more than 20 psi was already in effect.

Consideration to making an emergency brake application must be given if operating conditions dictate that the remotes must be idled immediately or to set the remotes into the box car mode.

d) Box Car Mode

If a CP or BNSF Remote (N/A on UP units) is in a state of “Comm Loss” and a Emergency or Penalty application has occurred. Once the penalty timer expires, the lead unit can be recovered normally. The Remote will transition to a “Box Car” mode and responds as follows:

- The Lead unit charges the Brake Pipe.
- When the Remote Brake Pipe rises above 60 psi, the independent brakes are released.
- The operator now has control of his train using head end power only.
- Until communication is restored, the remote will now function as a Box Car.

Note: If communication is restored with the Lead, and the Remote is in “Box Car” mode, the operator will see a “Comm Loss Idle Down” event and Remote screen will indicate “ISOLATE” on the display. The remote can be reset to “NORMAL” mode as follows:

- Make a sufficient brake pipe reduction, 15 psi or greater.
- Allow the brake pipe to stabilize.

Press **NORMAL / EXECUTE** and then release the brake.

5.3 What happens to the remote(s) which still have communication?

They simply obey all throttle, dynamic brake and air brake application and release commands from the lead locomotive.

5.4 BP Rise - Emergency Brake Applications

Caution: Attempts to make an automatic brake release in a state of COMM with the remote brake valve IN must not be made - a BP RISE emergency application of the brakes will occur.

On CP locomotives equipped with UHF Radios, the BP rise feature has been aligned with BNSF and UP design and will respond as follows:

If there is communication between the lead and remote(s) and a unknown brake pipe rise occurs when a brake application is in effect, a brake pipe rise alarm will be indicated on the lead unit, however the unit(s) will continue in the commanded state.

If there is a "Comm Loss" between the lead and remote(s) and a unknown brake pipe rise occurs when a brake application is in effect, the remote(s) will go into a state of Comm Loss Idle Down and transition to REMOTE ISOLATE mode (Note: if in DB, it will be maintained). You must command the remote(s) to NORMAL mode to regain control of the remote unit(s).

Note: If the lead unit experiences a un-commanded brake pipe rise while the reverser is centered and full independent brake is applied, then a emergency brake application will occur.

Warning: A communication interrupt which lasts for 90 minutes will cause the system to Unlink; a service brake application will then occur, reducing BP pressure to 0 psi.

5.5 Remote sensed emergency brake application

If a remote senses an emergency brake application it will report PC and zero brake pipe pressure. The emergency is then propagated to the lead unit through the brake pipe. On UHF Radio equipped locomotives (CP & UP), the remote unit will radio command an emergency brake application to the lead unit. This does not occur if the remote(s) is in set-out mode. BNSF remote units do not radio command an emergency sensed at the remote unit.

5.6 Flow Sensor Check Required With Locomotives in Train

A flow sensor check must be performed:

- the first time cars are placed between a lead locomotive and a remote or between remotes AND
- subsequently when cars are added such that the total number of cars between a lead locomotive and a remote or between adjacent remotes exceeds 60, 80, 100 or 120 cars.

If a flow sensor check is required, follow the procedure in item 7.5.

6.0 Controlled Tractive Effort feature (CTE Mode) on ES4400AC Locomotives

CP ES4400AC locomotives, are equipped with a feature (CTE) that will limit tractive effort on remote locomotives to 110,000 lbs each, this system reduces excessive forces at the rear of the train during slow speed / high throttle operations to allow two remotes on the rear of a train.

This feature is available on all CP ES4400AC locomotives (CP 8700 to CP 8899). At this time CP does not operate with two AC remotes on the rear of a train and therefore we do not use the CTE mode.

Operation:

- The Lead unit and Controlling Remote must be equipped with CTE software for the CTE mode to work, otherwise they will only operate in the Full Tractive Effort (FTE) mode.
- Only the remote(s) will work in the reduced mode, the lead unit(s) will still produce full tractive effort.
- At Locotrol power up, CTE equipped locomotives will always default to the FTE mode.
- The Distributed Power Operations Screen on the lead locomotive will indicate if the remote is in the FTE or CTE mode.
- The Main Operating Screen on the controlling remote will indicate if the tractive effort is limited.

To change the remote from the CTE mode to the FTE mode, the following steps are required:

- Locomotives must be linked with good communication – No (comm) loss.
- Locomotives must be stopped. (UP Locomotives must be unlinked, BNSF units are not equipped)
- Brake Cylinder pressure on locomotives must be greater than 25 psi.
- Throttle at Idle.
- Reverser centered.

Select the system mode screen (press **MODE**).

- Press the **SEL FTE** button and then depress **EXECUTE**.
- You should receive a **FTE OK** system event notification.
- If there is no communication after 45 secs, an **FTE Error** message will appear and you will be prompted to select the FTE mode again.

Locotrol Startup and Shut Down

7.0 Preparing Locotrol Equipment for Service

If the Locotrol equipment is not set up by mechanical services, the following procedures must be followed by the locomotive Engineer to set up Locotrol for service.

Locotrol equipped locomotives are qualified every 180 days by mechanical services to work in distributed power service. There is no longer a requirement for mechanical services to previously qualify locomotives (Link & GO) to operate as a set.

CAUTION - Hand Brakes: Without exception, unless movement can be prevented with locomotive brakes sufficient hand brakes **MUST** be applied. BP hoses must be connected between lead and remote consists.

Cab Signals:

Some locomotives are equipped with Cab Signals (a signal system used in the USA). There are Cab Signal indicators on the locomotive operating screen and in order to operate Locotrol in Canada, the cab signal indicator should read as follows:

LEAD Unit;		REMOTE Unit;	
UP Mode	Cut-In	UP Mode	Cut-Out
CNW Mode	Cut-Out	CNW Mode	Cut-Out

Cab Signal Set Up Instructions.

For example, to Cut-In the UP Mode, press:

- CAB SIGNALS
- CAB SIGNAL MODE
- CHANGE UP MODE
- ACCEPT SETTING
- CONFIRM SETTINGS

7.1 Setting Up the Remote(s):

NOTE: Set up REMOTE(s) first, then LEAD. The locomotives may be any combination of Locotrol IV and Locotrol LEB (i.e., Locotrol IV used with Locotrol LEB remote(s), vice versa, or in any combination of lead and remotes). Follow these steps in order for each remote:

	Setting Up Remotes	Locotrol IV Remote(s)	Locotrol LEB Remote(s)	
1	CONTROL STAND:	ENGINE RUN OFF GENERATOR FIELD OFF CONTROL or CONTROL/FUEL PUMP..... ON DYNAMIC BRAKE C Brk ON Power Limit Switch (AC4400s)..... 4000 HP/ENABLE Reverser REMOVED Independent Brake LEAD – RELEASE Automatic Brake Cut-IN - Handle OFF	ENGINE RUN OFF GENERATOR FIELD OFF CONTROL or CONTROL/FUEL PUMP..... ON DYNAMIC BRAKE C Brk ON Power Limit Switch (AC4400s) 4000 HP/ENABLE Reverser REMOVED Independent Brake .. LEAD - FULLY Applied (later to RELEASE) Automatic Brake Cut-IN - RELEASE (later to Handle OFF)	
2	ENGINE CONTROL (EC) PANEL:	EC/ISOLATION Switch RUN DISTRIBUTED POWER C Brk (AC4400)..... ON LOCOTROL C Brk (SD90MAC)..... ON	EC/ISOLATION Switch RUN LEB COMPUTER C Brk ON	
3	SYSTEM MODULE PANEL (In Nose):	LEAD UNIT NUMBER dial to Lead Unit		
4	TOGGLE SWITCHES (3) (In Nose)	LEAD/REMOTE REMOTE LOCOTROL/CONVENTIONAL . LOCOTROL SAME-LEAD/OPPOSITE .. Correct position		
5	CIRCUIT BREAKERS	3 (In Nose): ELEC ON RELAY ON RADIO ON	AC 4400's In Nose, under a protective shield: DP RADIO ON DP TRAINLINE ON	ES4400AC's On Engine Control(EC) Panel DP RADIO ON
6	LOCOMOTIVE SCREEN		Press: <ul style="list-style-type: none"> • DISTR POWER, • REMOTE SETUP. Set: <ul style="list-style-type: none"> • LEAD LOCOMOTIVE ID & NUMBER, • DIRECTION (SAME/OPPOSITE). Press: <ul style="list-style-type: none"> • DONE (an emergency PCS occurs). Follow IFD screen prompt to place: <ul style="list-style-type: none"> • IB handle to RELEASE, • AB handle to HO (handle off). 	
7		Set up all locomotives coupled to a remote in conventional trailing mode.		
8		After all remotes have been set up, then set up the lead locomotive as per 7.2.		

7.2 Setting Up a Locotrol Lead Locomotive:

NOTE: Set up the LEAD locomotive after the REMOTE(s). Follow these steps in order for the lead locomotive.

LEAD SET UP		Locotrol IV	Locotrol LEB	
1	CONTROL STAND	ENGINE RUN ON GENERATOR FIELD(for now) OFF CONTROL or CONTROL/FUEL PUMP..... ON DYNAMIC BRAKE C Brk ON Reverser NEUTRAL Independent Brake..... LEAD - FULLY Applied Automatic Brake..... Cut-IN – EMERGENCY/RELEASE		
2	ENGINE CONTROL (EC) PANEL	EC/ISOLATION Switch..... RUN DISTRIBUTED POWER C Brk (AC4400)..... ON LOCOTROL C Brk (SD90MAC)..... ON	EC/ISOLATION Switch..... RUN LEB COMPUTER C Brk..... ON	
3	SYSTEM MODULE PANEL (IN Nose)	LEAD UNIT NUMBER..... dial to 0000		
4	TOGGLE SWITCHES (3) (In NOSE)	LEAD/REMOTE..... LEAD LOCOTROL/CONVENTIONAL..... LOCOTROL SAME-LEAD or OPPOSITE..... LEAD		
5	CIRCUIT BREAKERS	(3) (IN Nose) ELEC..... ON RELAY..... ON RADIO..... ON	AC 4400's In Nose, under a protective shield: DP RADIO ON DP TRAINLINE ON	ES4400AC's On Engine Control(EC) Panel DP RADIO ON
6		Set up all locomotives coupled to the lead in conventional trailing mode.		
7		Link Locotrol (item 7.3) and perform a BP test (item 7.4).		

7.3 System Linking (Locotrol Lead Locomotive)

	Locotrol IV After power-up, Control Console performs a display & audible alarm test.	Locotrol LEB NOTE: Ensure locomotive screen (i.e., speedometer, etc.) is on the right.
1	To conclude the test, press any switch on Control Console. SETUP screen will be displayed.	On right screen, press DISTR POWER (if displayed). Press LEAD SETUP.
2	Using arrow switches, enter locomotive number of first remote (unit B). Press LINK. Ensure console displays Linked OK beside unit B.	Using COUNT UP/DOWN, DIGIT LEFT/RIGHT, enter locomotive ID & number of first remote (unit B). Press LINK. Ensure screen displays LINKED OK beside B.
3	Enter locomotive number of second remote (unit C). Press LINK. Ensure console displays OK beside unit C. Repeat process for remotes D and E as applicable.	Enter locomotive ID & number of second remote (unit C). Press LINK. Ensure screen displays LINKED OK beside unit C. Repeat procedure for remotes D and E as applicable.
4	Press DONE. The SYSTEM screen will be displayed.	Press DONE / ACCEPT. System advances to Distributed Power System Log screen.
5		Press DP MAIN MENU. Check event log and alarm log for fault conditions. Air brake system failures and back-up emergency valve failures must be corrected. Press EXIT.

7.4 BP Test (Lead Locomotive)

	Locotrol IV	Locotrol LEB
	When the SYSTEM screen is displayed for the first time, BP TEST must be performed. The operator cannot select another display.	
1	Ensure FULL independent brake. To recover PCS, place AB in Emergency.	Ensure FULL independent brake. To recover PCS, place AB in EMER (for 60 seconds) and then move to RELEASE as per message on screen.
2	When IFD so indicates, place AB handle in RELEASE. Each remote will begin to charge when it senses an increase in BP pressure.	On left screen, press: <ul style="list-style-type: none"> • DP MAIN MENU (if displayed), • EXIT (if displayed), • DISTR POWER, • DP CONTROL On right screen, press: <ul style="list-style-type: none"> • DISTR POWER (if displayed), • DP MAIN, • SYSTEM
3	Press BP TEST.	On left screen, wait for message PERFORM BRAKE PIPE TEST WHEN READY, and then go to next step.
4	When every flow rate is less than 30 cfm and sum is less than 60 cfm, wait 2 minutes. Press EXECUTE.	When every flow rate is less than 30 cfm and sum is less than 60 cfm, wait 2 minutes. On right screen, press BRK PIPE TEST, press EXECUTE
5	Move AB handle to MINIMUM REDUCTION, Wait approximately one minute.	On left screen, when message box says SET AUTOMATIC BRAKE HANDLE TO MINIMUM, move AB handle to MINIMUM REDUCTION.
6	If BP TEST is OK, system will advance to IDLE mode. Locotrol is now fully operational and other screens as desired may now be selected. <ul style="list-style-type: none"> • MODE, • RUN, • EXECUTE, • CANCEL. 	In left screen display BRAKE PIPE TEST OK, then on right screen press DP MAIN MENU. Locotrol is now fully operational. On right screen, press: <ul style="list-style-type: none"> • MODE, • RUN, (RUN – FTE on ES4400AC) • EXECUTE, • EXIT.
7	If BP TEST is not successful, move AB to RELEASE, check angle cocks, recharge BP and repeat steps 3, 4, 5 & 6.	
8	On UHF Radio equipped locomotives, if the automatic brake handle is moved to a greater than minimum application, the system will cancel the test and display the following message "Brake Pipe Test cancel - excessive application". To correct, release the brake, recharge to less than 30 CFM on lead and remote(s) and perform the test again. There is also an optional brake pipe test that can be performed on demand at any time while the train is stopped. Note - if this test is selected on demand, and if it does not pass, the remote(s) will revert to IDLE mode.	

7.5 Flow Sensor Check Required With Locomotives in Train, as per item 5.6

A Flow Sensor Check is performed as follows:

	Locotrol IV	Locotrol LEB
1	Move AB to RELEASE.	
2	Ensure unit A and unit(s) B, C, D, and E (as applicable) display charging flow rates less than 30 cfm.	
3	Wait at least 2 minutes for the air flow charging rate to stabilize.	
4	Place the Locotrol RADIO circuit breaker OFF.	Place the Locotrol Distributed Power RADIO circuit breaker OFF.
5	Make an AB application of at least 15 psi.	
6	Ensure the service exhaust ceases and ensure that TIBS (if equipped) indicates a BP pressure drop of approximately 15 psi.	
7	Place the Locotrol RADIO circuit breaker ON.	Place the Locotrol Distributed Power RADIO circuit breaker ON.
8	Ensure that the applicable remotes B, C, D & E each report ISOLATE: this means the Flow Sensor check was successful and that it is OK to bring in the remote brake valve(s) and then perform a train air brake test as per normal procedures.	<p>Ensure the applicable remotes B, C, D, and E each report FLOW OUT. This means the Flow Sensor check was successful and that it is OK to bring in the remote brake valve(s).</p> <p>To bring in the remote brake valve(s), press:</p> <ul style="list-style-type: none"> • MORE MENU (if displayed), • REMOTE MENU (if displayed). <p>For each remote, press:</p> <ul style="list-style-type: none"> • NORMAL, • EXECUTE. <p>Move AB to RELEASE.</p> <p>Perform a train air brake test as per normal procedures.</p>
<p>NOTE: If step 8 was not successful, repeat steps 1 through 8 (in the application of step 3, it is important to have steady stable air flow.)</p>		

8.0 Shutting Down Locotrol (Unlinking)

8.1 Shutting Down the Lead Locomotive

- NOTE 1** - Train must be stopped, throttle IDLE, independent brake FULLY applied.
2 - Shutdown Locotrol on LEAD locomotive FIRST, then REMOTE.
3 - Hand brakes may be required. The train will be standing with a penalty brake application while Locotrol is being shutdown.

	Locotrol IV	Locotrol LEB	
1	Press: SYSTEM • UNLINK • EXECUTE System unlinks and penalty brakes apply.	On locomotive screen, press: (soft key) • DISTR POWER (if displayed), • DP MAIN , • SYSTEM .	
2	TOGGLE SWITCHES (3) (In Nose): LEAD/REMOTE LEAD LOCOTROL/CONVENTIONAL..... CONVENTIONAL SAME-LEAD or OPPOSITE LEAD	Press: • UNLINK , • EXECUTE . System unlinks, and emergency brakes apply.	
3	CIRCUIT BREAKERS (3) (In Nose): ELEC OFF RELAY..... OFF RADIO..... OFF	Press: • END DIST PWR , • EXECUTE .	
4	ENGINE CONTROL (EC) PANEL: DISTRIBUTED POWER C Brk AC4400)..... OFF LOCOTROL C Brk (SD90MAC) OFF	CIRCUIT BREAKERS (AC4400's) (In Nose, under a protective shield): DP OFF DP TRAINLINE OFF	CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DP OFF

8.2 Shutting Down the Remotes

Shut down the remote(s) AFTER the lead locomotive. Follow these steps in order for each remote.

	Locotrol IV	Locotrol LEB	
1	SYSTEM MODULE PANEL (In Nose): LEAD UNIT NUMBER dial to 0000	On locomotive screen, press: (soft key) • DISTR POWER, • END DIST PWR, • EXECUTE.	
2	TOGGLE SWITCHES (3) (In Nose): LEAD/REMOTE NO CHANGE LOCOTROL/CONVENTIONAL..... CONVENTIONAL SAME-LEAD or OPPOSITENO CHANGE	Ensure DP ON , or DP REMOTE ENABLED indicator is OUT .	
3	CIRCUIT BREAKERS (3) (In Nose): ELEC OFF RELAY..... OFF RADIO..... OFF	CIRCUIT BREAKERS (AC4400's) (In Nose, under a protective shield): DP OFF DP TRAINLINE OFF	CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DP OFF
4	ENGINE CONTROL (EC) PANEL: DISTRIBUTED POWER C Brk AC4400)..... OFF LOCOTROL C Brk (SD90MAC) OFF		
5	CONTROL STAND: Set up control stand and electronic air brake system for either lead or trailing unit operation.		
6	The shutdown of Locotrol equipment is now complete.		

9.0 Changing Ends

- To change ends:
- 1 - re-configure the lead as a remote,
 - 2 - re-configure middle remote(s) to the new lead, and
 - 3 - re-configure the tail-end remote as the new lead.

The locomotives may be any combination of Locotrol IV and Locotrol LEB (i.e., Locotrol IV used with Locotrol LEB remote(s), vice versa, or in any combination of lead and remotes.)

CAUTION – Handbrakes: Unless movement can be prevented with locomotive brakes, sufficient hand brakes must be applied. The train will be standing with emergency brakes applied while changing ends.

9.1 To re-configure LEAD as remote:

	Locotrol IV	Locotrol LEB		
1	Press: SYSTEM UNLINK EXECUTE (a penalty brake will occur)	Press: DISTR POWER (if displayed) DP MAIN – SYSTEM – UNLINK – EXECUTE (a penalty brake will occur) END DIST PWR – EXECUTE		
2	CIRCUIT BREAKERS (3) (In Nose): ELEC, RELAY, RADIO..... OFF (emergency will occur)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> CIRCUIT BREAKERS (2) (AC4400's) (In Nose under protective shield): DP TRAINLINE.....OFF DP RADIO.....OFF ...Then turn both C Brks.....ON </td> <td style="width: 50%; vertical-align: top;"> CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DPOFF ...Then turn C Brkr.....ON </td> </tr> </table>	CIRCUIT BREAKERS (2) (AC4400's) (In Nose under protective shield): DP TRAINLINE..... OFF DP RADIO..... OFF ...Then turn both C Brks..... ON	CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DP OFF ...Then turn C Brkr..... ON
CIRCUIT BREAKERS (2) (AC4400's) (In Nose under protective shield): DP TRAINLINE..... OFF DP RADIO..... OFF ...Then turn both C Brks..... ON	CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DP OFF ...Then turn C Brkr..... ON			
3	TOGGLE SWITCHES (2) (In Nose): LEAD/REMOTE..... REMOTE SAME-LEAD / OPPOSITE..... Correct Position	Press: <ul style="list-style-type: none"> • DISTR POWER • REMOTE SETUP Set: <ul style="list-style-type: none"> • new LEAD LOCO # • DIRECTION (SAME/OPPOSITE) Press: <ul style="list-style-type: none"> • DONE 		
4	SYSTEM MODULE PANEL (In Nose): LEAD UNIT NUMBER..... dial to new Lead Unit			
5	CIRCUIT BREAKERS (3) (In Nose): ELEC, RELAY, RADIO..... ON			
6	CONTROL STAND: Reverser REMOVED Independent Brake..... RELEASE Automatic Brake..... HO (handle off) ENGINE RUN..... OFF GENERATOR FIELD..... OFF Power Limit Switch..... 4000 HP/ENABLE			

9.2 To re-configure MIDDLE REMOTE(s) to new lead locomotive (if applicable):

	Locotrol IV MIDDLE Remote(s)	Locotrol LEB MIDDLE Remote(s)	
1	CIRCUIT BREAKERS (3) (In Nose): ELEC, RELAY, RADIO.....OFF	Press: DISTR POWER (if displayed) END DIST PWR – EXECUTE	
2	TOGGLE SWITCH (In Nose): SAME-LEAD / OPPOSITE.....Correct Position	CIRCUIT BREAKERS (2) (AC4400's) (In Nose under protective shield): DP TRAINLINE.....OFF DP RADIO.....OFF ...Then turn both C Brks.....ON	CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DPOFF ...Then turn C Brkr.....ON
3	SYSTEM MODULE PANEL (In Nose): LEAD UNIT NUMBER.....dial to new Lead Unit	Press: • DISTR POWER • REMOTE SETUP	
4	CIRCUIT BREAKERS (3) (In Nose): ELEC, RELAY, RADIO.....ON	Set: • new LEAD LOCO # • DIRECTION (SAME/OPPOSITE) Press: • DONE	

9.3 Re-configure the REMOTE at extreme rear of train as LEAD, and complete the linking and testing on the new Lead locomotive:

	Locotrol IV	Locotrol LEB	
1	CIRCUIT BREAKERS (3) (In Nose): ELEC, RELAY, RADIO..... OFF	Press: DISTR POWER (if displayed) END DIST PWR – EXECUTE	
2	TOGGLE SWITCHES (2) (In Nose): LEAD/REMOTE..... LEAD SAME-LEAD / OPPOSITE..... LEAD	CIRCUIT BREAKERS (2) (AC4400's) (In Nose under protective shield): DP TRAINLINE..... OFF DP RADIO..... OFF ...Then turn both C Brks..... ON	CIRCUIT BREAKER (ES4400AC's) On Engine Control (EC) Panel: DP OFF ...Then turn C Brkr..... ON
3	SYSTEM MODULE PANEL (In Nose): LEAD UNIT NUMBER..... 0000		
4	CIRCUIT BREAKERS (3) (In Nose): ELEC, RELAY, RADIO..... ON		
5	CONTROL STAND: Independent Brake..... FULLY Applied Automatic Brake..... EMERGENCY Reverser CENTERED ENGINE RUN..... ON GENERATOR FIELD..... ON Power Limit Switch..... 4000 HP/ENABLE		
6	Link , following the procedure in item 7.3.		
7	Perform BP Test , following the procedure in item 7.4.		
8	Complete Flow Sensor Check , following the procedure in item 7.5.		
1	If provided, install SBU . Before testing the TIBS emergency feature in accordance with GOI Section 6, item 15.3.		
2	Perform a Locomotive Brake Test .		
3	Perform a Train Brake Test .		

9.4 Modified Locomotive Brake Test Procedure for Changing Ends on Tail End Remote Trains at Sparwood.

STEP	PROCEDURE
1	Change ends as per GOI Section 17 Item 9.0.
2	Test the operation and recovery of the Safety Control System (RSC).
3	Set the Automatic Brake on the train to hold the train on the grade to protect against unintended movement.
4	Release the locomotive brakes by depressing the independent brake handle (bail) for at least 4 seconds for each locomotive in the consist.
5	Fully apply and release the independent brakes.
6	Make a further 10 psi brake pipe reduction and upon the train's departure from Sparwood, release the automatic brake.

LOCOTROL OPERATION

Front Group and Back Group

10.0 MU Operation (Front Group)

	Locotrol IV	Locotrol LEB
1	If RUN is displayed in upper right corner of the screen, each remote is automatically configured with the lead locomotive (FRONT group) and will respond to all air brake, throttle and dynamic brake commands from the lead locomotive.	If RUN is displayed in upper left corner of the distributed Power Operation screen, each remote is automatically configured with the lead locomotive (FRONT group) and will respond to all air brake, throttle and dynamic brake commands from the lead locomotive.
2	If Locotrol is not in RUN mode, then press: <ul style="list-style-type: none"> • MODE – RUN – EXECUTE. (Ensure current mode indicates RUN.) 	If Locotrol is not in RUN mode, then on the locomotive screen press: <ul style="list-style-type: none"> • DIST POWER (if displayed) – DP MAIN • MODE – RUN – EXECUTE. (Ensure current mode indicates RUN.)
3	If a remote(s) brake valve has been cut out, then make a 10 psi AB application, select each remote and press NORMAL – EXECUTE . Move AB to RELEASE and note charging or flow rates for each remote. (The remote must see a 4 psi rise in BP pressure to allow its brake valve to come in.)	
N	Three other choices are available on MODE display: IDLE, TOWER and Speed .	
O	<ul style="list-style-type: none"> • if IDLE is pressed, the remote remains in idle, but all air brake functions (including remote brake valve IN capability) are enabled. 	
T	<ul style="list-style-type: none"> • TOWER should only be pressed in the procedure used at Roberts Bank for unloading coal. Delays will occur if TOWER/EXECUTE is pressed elsewhere. 	
E	<ul style="list-style-type: none"> • If SPEED is pressed, the remote(s) is enabled for slow speed operation. 	

11.0 Independent Motoring (Back Group)

	Locotrol IV	Locotrol LEB
1	Independent motoring is only available in the RUN mode (i.e., RUN/EXECUTE have been pressed), and the remote(s) is operating in the throttle or dynamic brake position #1 or greater.	
2	When independent mode is required, press: <ul style="list-style-type: none"> • MAIN • BACK 	When independent mode is required, press: <ul style="list-style-type: none"> • CONTROL MENU (if displayed) • MOVE TO BACK
3	This causes a remote unit to be removed from the FRONT group (MU mode) and placed in the BACK group where it can be controlled independently of the lead locomotive.	
4	When placed into the back group, its previous throttle/dynamic brake continue at same level, but can now be controlled by the (up), (down), IDLE, TRA and DYN switches.	When placed into the back group, its previous throttle/dynamic brake continue at the same level, but can now be controlled by pressing MORE/LESS TRACTION, MORE/LESS BRAKE, IDLE, TRACTION, or BRAKE . A green vertical bar separates the front and back group.
5	To return the remote unit to the FRONT group, press FRONT .	To return the remote to the FRONT group, press: <ul style="list-style-type: none"> • CONTROL MENU (if displayed), • MOVE to FRONT.

Brake Tests

12.0 Train Air Brake Test

12.1 AFM Train Brake Test Train Brake

	Locotrol IV	Locotrol LEB
1	Press REMOTE - ensure each remote reports CHARGING. This means the brake valve is IN on each remote.	Press: <ul style="list-style-type: none"> • MORE MENU (if displayed) • REMOTE MENU (if displayed). Ensure each remote displays a value for FLOW (0 or higher). This means the brake valve is IN.
2	If a remote brake valve is OUT, then make a 10 psi AB application. <ul style="list-style-type: none"> • Press NORMAL – EXECUTE. • Move AB to RELEASE. (The remote must see a 4 psi rise in BP pressure to allow its brake valve to come in.) • On Locotrol IV Press MAIN 	
3	When rear car is charged to at least 75 psi and when the sum of the lead and remote(s) air flow indicators displays 60 cfm or less, AND when a signal is given to apply the brakes, make a full service AB application.	
4	Press REMOTE . Wait 30 seconds after service exhaust ceases. Select remote(s) one at a time, press BV OUT. Press EXECUTE. Ensure each remote reports BV OUT.	Wait 30 seconds after service exhaust ceases. Select remote(s) one at a time, press BV OUT. Press EXECUTE. Ensure each remote reports flow is OUT and BV OUT.
5	In the application of the note in GOI Section 13, Item 8.1, the incoming locomotive engineer should perform steps 2 and 3 above.	
6	When the signal is given to release the brakes, select each remote one at a time, press NORMAL, EXECUTE. Move automatic brake handle to RELEASE.	
7	Ensure each remote displays CHARGING and that BP pressure is rising at the rear of the train.	Ensure each remote displays a value for FLOW and that BP pressure is rising at the rear of the train.

12.2 Test with a Remote on Extreme Rear of Train

	Locotrol IV	Locotrol LEB
1	Press REMOTE - ensure each remote reports CHARGING. This means the brake valve is IN on each remote. Press MAIN	Press: <ul style="list-style-type: none"> • MORE MENU (if displayed) • REMOTE MENU (if displayed). Ensure each remote displays a value for FLOW (0 or higher). This means the brake valve is IN.
2	Press MAIN. When the sum of the lead and remote air flow indicators displays 60 cfm or less, AND a signal is given to apply the brakes, press REMOTE, select each remote one at a time, press BV OUT. Press EXECUTE. Ensure each remote reports BV OUT.	When the sum of the lead and remote air flow indicators displays 60 cfm or less, AND a signal is given to apply the brakes, select each remote one at a time and press BV OUT. Press EXECUTE. Ensure each remote reports flow is OUT and BV OUT.
3	Wait 1 minute for BP pressure to stabilize. Ensure last Remote Screen / TIBS indicates BP pressure at least 75 psi.	
4	Make a full service brake application.	
5	In the application of the note in GOI Section 13, Item 8.1, the incoming locomotive engineer should apply the brake, but it is not necessary to drop each remote BV OUT until after a full service brake application has been made.	
6	When the signal is given to release the brakes, select each remote one at a time, press NORMAL, EXECUTE. Move automatic brake handle to RELEASE.	
7	Ensure each remote displays CHARGING and that BP pressure is rising at the rear of the train.	Ensure each remote displays a value for FLOW and that BP pressure is rising at the rear of the train.

12.3 Train Air Brake Test Brake Pipe Leakage Method - When AFM test cannot be performed

	Locotrol IV	Locotrol LEB
	Perform this train air brake test when the AFM test cannot be performed. (e.g., Air flow indicators are not working.)	
	NOTE: Ensure the Locotrol system is in IDLE mode.	
1	Press REMOTE - ensure each remote reports CHARGING.	Press REMOTE MENU (if displayed) - ensure remote(s) display a value for FLOW.
2	When the last car / remote is charged to at least 75 psi AND a signal is given to apply the brakes, press SYSTEM. Press LEAKAGE. Press EXECUTE.	When the last car / remote is charged to at least 75 psi AND a signal is given to apply the brakes, on the locomotive screen, press DISTR POWER (if displayed). Press DP MAIN, press SYSTEM, press LEAKAGE TEST, press EXECUTE.
3	<p><i>The Locotrol system will initiate a 15 psi automatic brake application and then allow BP pressure to stabilize.</i></p> <p><i>Approximately 1 minute after the service exhaust stops blowing, both the lead and remote brake valves will automatically be cut-out.</i></p> <p><i>Leakage will be measured by the Locotrol system and PASS/FAIL results of the test will be displayed. This will take approximately 2 to 2.5 minutes.</i></p> <p><i>Leakage must not exceed 5 psi per minute.</i></p>	
4	When prompted by the Locotrol console, place the AB handle in the FULL SERVICE position. The brake valve on the lead locomotive is automatically cut-in so that the full service reduction can be made.	
5	When the full service reduction is complete and the signal is given to release the brakes, move the AB handle to RELEASE. The remote brake valve(s) will automatically be cut-in.	
6	Ensure each remote displays CHARGING and that BP pressure is rising at the rear of the train. Ensure the Locotrol system is in RUN mode as per item 10.0 Step 1.	Ensure each remote displays a value for FLOW and that BP pressure is rising at the rear of the train. Ensure the Locotrol system is in RUN mode as per item 10.0 Step 1.

12.4 Testing Locotrol Emergency Brake Feature for Tail End Remote Operation and no SBU

At the location where train is first made up, perform pre-departure emergency brake test with Remote Locomotive on Extreme Rear of Train (without an SBU) as follows;

PROCEEDURE	
1	Ensure that the sum of the lead and remote air flow indicators displays 60 CFM or less.
2	Close a brake pipe angle cock anywhere ahead of the remote locomotive on extreme rear of the train. NOTE: on conductor only trains, it is permissible to close the angle cock immediately behind the lead locomotive consist.
3	Using the automatic brake valve on the lead locomotive, cause an emergency brake application.
4	Locomotive Engineer: Verify that an emergency brake application occurs on the remote locomotive (e.g., remote reports PC alarm flashing, BV OUT and B Pipe = 0 PSI.) Conductor/Qualified Person: Verify that the emergency propagates to the head end car or to the car/locomotive on either side of the closed angle cock.
5	Recover the emergency brake application on the train as per GOI Section 17, item 17.0.
6	Complete the Crew to Crew form. (see example)

Crew to Crew Example: Crew to Crew with remote at extreme rear of train and no SBU.

Train	Lead Locomotive	Date	FBS/TE Remote - Emergency Brake Feature
# 830	# 9809	01 / 10 / 2004 DD MM YY	SBU/REMOTE# 9810 tested by ENGR Green (PLEASE PRINT) at 1400 Golden time location

13.0 Brake Pipe Continuity - IMPORTANT (as per GOI Sec 13 item 9.3)

	Locotrol IV	Locotrol LEB
1	Make a 15 psi BP reduction and know that BP pressure has decreased at the rear of the train. If locomotive is equipped, the Train Check Test feature can be used in lieu of the procedures below. If the train check test fails, the following message will be displayed: "Train Check Fail – Check Train".	
2	Press REMOTE . Wait 30 seconds after service exhaust ceases. Select remote(s) one at a time, press BV OUT. Press EXECUTE. Ensure each remote reports BV OUT.	Wait 30 seconds after service exhaust ceases. Select remote(s) one at a time, press BV OUT. Press EXECUTE. Ensure each remote reports flow is OUT and BV OUT.
3	When ready to proceed, select each remote one at a time, press NORMAL, EXECUTE. Move automatic brake handle to RELEASE.	
4	Ensure each remote displays CHARGING and that BP pressure is rising at the rear of the train. If not, check BP angle cocks and repeat steps 1-3.	Ensure each remote displays a value for FLOW and that BP pressure is rising at the rear of the train. If not, check BP angle cocks and repeat steps 1-3.
5	Train may be started when brakes have been released.	
4	At points on grades where it is not practical to re-establish BP continuity in the foregoing manner, every effort must be made to ensure correct air pressure readings are maintained at the rear of the train and any variation or other indication that the train may have been tampered with must result in immediate action to secure the train and re-test before proceeding.	

Coupling/Uncoupling and Break-in-Two

14.0 Coupling Lead and Remote Locomotives (with/without cars)

	Locotrol IV	Locotrol LEB
1	Recouple the two portions of the train. Place the AB handle in EMERGENCY (for at least one minute), UNLESS movement can be prevented with locomotive brakes. Open the angle cock and then recharge train air brake system as per Emergency Brake Application Recovery outlined in item 17.0.	
2	<p>After recoupling the two portions of the train, if it was NOT necessary to make an emergency brake application because movement can be prevented with locomotive brakes, follow these steps:</p> <ul style="list-style-type: none"> • If coupling is made, ensure independent brake is FULLY applied. • Make at least a 35 psi AB reduction. • Open BP angle cock. • Request removal of 3 point protection. • Press REMOTE. • Select each remote one at a time, and press NORMAL, EXECUTE. • Move AB handle to RELEASE. <ul style="list-style-type: none"> ○ Ensure PCS alarm indicator for each remote goes out. ○ Ensure each remote displays CHARGING (IV) or a value for FLOW (LEB). ○ Ensure BP pressure is rising at the rear of the train. 	
<p>WARNING: Do NOT exit setout (S/O) mode (see item 15.0 - step 4) unless the lead and remote consists (with/without cars) are coupled together with BP hoses connected and angle cocks opened.</p>		

15.0 Uncoupling Lead and Remote Locomotives (with/without cars)

	Locotrol IV	Locotrol LEB
1	Before uncoupling lead consist (with/without cars or with/without all remote units), a service brake application must be made. It must be sufficient to prevent train movement while BP hoses are parted.	
2	Wait 30 seconds after exhaust ceases.	
3	Press REMOTE.	Press MORE MENU (if displayed). Press REMOTE MENU (if displayed).
4	Select each remote to be left standing and one at a time, press SETOUT (S/O). Press EXECUTE. On each applicable remote unit, this will drop out the brake valve and apply full independent brake.	
5	Press UNIT. Select each remote one at a time and ensure each remote reports ISOLATE, BV OUT and Brk Cyl Press = 72 psi.	Ensure each remote reports FLOW OUT, SETOUT and Brk Cyl = 72 psi.
6	Advise the crew member that it is now OK to close the angle cock on the portion to be moved.	
7	That portion to be left standing must be placed in EMERGENCY. On trains so equipped, the TIBS emergency braking feature must be activated.	
8	It must be observed that each remote to be left standing reports: B Pipe = 0 psi, Br Cyl = 45 psi (or higher) and that PC alarm is flashing.	
9	Movement of the head end of the train is now permitted.	
10	The standing portion must be left in compliance with GOI Section 14, item 2.0 b), c) and d).	

16.0 Break-in-Two

	Locotrol IV	Locotrol LEB
	When a break-in-two occurs on a Locotrol train between the lead consist and the remote consist, or between 2 remote consists, after movement stops:	
1	Select each remote and one at a time, press S/O, press EXECUTE. On each applicable remote unit, this will drop out brake valve and apply full independent brake.	
2	Press UNIT. Ensure each remote reports ISOLATED, BV OUT and Br Cyl Press = 45 psi and that the PC alarm is flashing.	Press MORE MENU (if displayed). Press REMOTE MENU (if displayed).
3	Select each remote to be left standing and one at a time, press SETOUT (S/O). Press EXECUTE. On each applicable remote unit, this will drop out the brake valve and apply full independent brake.	
4	Press UNIT. Select each remote one at a time and ensure each remote reports ISOLATE, BV OUT and Brk Cyl Press = 72 psi.	Ensure each remote reports Brk Pipe = 0, Brk Cyl = 45 psi (or higher), and PCS alarm is illuminated.
5	Determine which remote(s) are still coupled to the lead unit and apply sufficient hand brakes to hold both portions of the train as required.	
6	Close the angle cock on the lead portion of the train and recover emergency PCS on lead unit and on the remote(s) units which are still coupled to the lead locomotive.	
7	If necessary, remove or repair the equipment which caused the emergency brake application. Recouple the two parts of the train as per item 14.0.	

Emergency and Penalty (PCS) Brake Application Recovery

17.0 Emergency and Penalty (PCS) Brake Application Recovery

	Locotrol IV	Locotrol LEB
1	If considered necessary, apply sufficient hand brakes to prevent train movement while attempting to recover PCS and recharge train air brake system.	
2	Ensure throttle/dynamic brake handle is in IDLE, and reverser is in NEUTRAL.	
3	<p>EMERG PCS:</p> <ul style="list-style-type: none"> Place AB handle in EMERGENCY until IFD/ICE indicate GO TO RELEASE. Move AB handle to HANDLE OFF and then SUPPRESSION. Ensure PCS indication goes out on lead locomotive. <p>PENALTY PCS:</p> <ul style="list-style-type: none"> Place AB handle in SUPPRESSION for 8 seconds. Ensure PCS indicator goes out on lead locomotive. 	
4	Select each remote unit one at a time, press NORMAL or IDLE, press EXECUTE.	<ul style="list-style-type: none"> Press MORE MENU (if displayed). Press REMOTE MENU (if displayed). Select each remote one at a time, and press NORMAL, EXECUTE.
5	On the Locotrol console, ensure: <ul style="list-style-type: none"> PC alarm indicator goes out for each remote, Each remote displays CHARGING, BP pressure is rising at the rear of the train. 	On DP screen, ensure: <ul style="list-style-type: none"> PCS alarm indicator goes out for each remote. Each remote displays a value for FLOW. Ensure BP pressure is rising at the rear of the train.
6	After the train air brake system is recharged, a sufficient BP reduction must be made to prevent train movement while hand brakes (if any) are being released.	
7	If necessary, remove or repair the equipment which caused the emergency brake application. Re-couple the two parts of the train as per item 14.0.	

WARNING: PCS Recovery

The throttle and dynamic brake handle **MUST NOT** be moved from the **IDLE** position before attempting an automatic brake release. Following the release, ensure **BP** pressure is being recharged AND the **PCS** lights are out.

Locomotives or Trains Being Left Unattended

18.0 Locomotives or Trains Being Left Unattended

	Locotrol IV	Locotrol LEB
1	Apply handbrakes in accordance with hand brake policy and test their effectiveness.	
2	<ul style="list-style-type: none"> • Press MODE, press IDLE. • Ensure IDLE is displayed in upper right corner of screen. 	On locomotive screen, press: <ul style="list-style-type: none"> • DISTR POWER, • DP MAIN, • MODE, • IDLE (and ensure IDLE is displayed in upper left corner of DP screen), • EXIT.
3	<ul style="list-style-type: none"> • Place independent brake handle in FULL application position. • Place AB handle in RELEASE position. 	On DP operation screen, press: <ul style="list-style-type: none"> • MORE MENU (if displayed), • REMOTE MENU (if displayed), • ISOLATE & EXECUTE (ensure ISOLATE is displayed under each remote number).
4	<ul style="list-style-type: none"> • Press REMOTE. • Select each remote unit one at a time, press ISOLATE, press EXECUTE. • Ensure each remote displays ISOLATE and Brk Cyl = 72 psi. 	<ul style="list-style-type: none"> • Place independent brake handle in FULL application position. • Place AB handle in RELEASE position. • Ensure each remote displays Brk Cyl = 72 psi.
5	Center reverser and remove handle.	
6	Ensure generator field circuit breaker is OFF.	

Loading and Unloading

19.0 Tower Control - Roberts Bank Instructions**19.1 Positioning a Train for Unloading:****Note: BNSF & UP locomotives (including CP 9700 - 9714) do not have Tower Mode.**

	Locotrol IV	Locotrol LEB
1	A stop must be made outside the dumper. Wait for instructions from Westshore operations personnel to proceed. NOTE: maximum speed through the dumper is 2 MPH.	
2	Spot the leading car. Press REMOTE. Ensure Unit B is left in the RUN mode. For all other remote units C, D & E, select each remote unit one at a time, press IDLE – EXECUTE and ensure each remote displays IDLE.	Spot the leading car. Ensure unit B is left in RUN mode. For all other remotes C, D, and E, select each remote one at a time and press IDLE .
3	Press: MODE – TOWER – EXECUTE The independent brakes and a train penalty brake will automatically apply. The system will remain in IDLE mode until the tower takes control.	On locomotive screen, press: DISTR POWER – DP MAIN – MODE – TOWER – EXECUTE The independent brakes and a train penalty brake (Full Service on UHF Radio equipped locomotives) will automatically apply. The system will remain in IDLE mode until the tower takes control.
4	In the lead consist, ensure the EC/ISOLATION switches on all trailing locomotives are in the ISOLATE position. Ensure the EC/ISOLATION switch on the leading locomotive is in RUN position.	
5	On Locotrol IV and LEB locomotives with VHF Radios, place AUTOMATIC and INDEPENDENT brake handles in RELEASE position.	UHF Radio equipped locomotives, follow screen prompts to place AUTOMATIC to FULL SERVICE and INDEPENDENT to RELEASE position.
6	Center and remove REVERSER; place GEN FIELD circuit breaker OFF.	
7	Advise control tower personnel that train is ready for tower control - CROR Engine whistle signal 14 b (oo).	

19.2 When Train is Ready to Leave Roberts Bank After Unloading:

	Locotrol IV	Locotrol LEB
1	Train must already be in penalty brake. If not, the tower still has control. Before pulling from the dumper or departing, obtain permission from the BC Rail supervisor at Roberts Bank.	
2	To re-establish the Locotrol IV radio link, press: MODE – RUN – EXECUTE	To re-establish the Locotrol LEB radio link, press: DP MAIN – MODE – IDLE – RUN (RUN-FTE on ES44AC's) – EXECUTE
3	Place the EC switch on all units in lead consist to RUN position.	
4	The Locotrol IV equipment is now ready to proceed. Charge the train air brake system and perform required train air brake test.	

20.0 Slow Speed Control

Before entering the load out facility, a STOP must be made, and requested loading speed obtained from load out operating staff.

NOTES

- Trailing GE AC4400 and SD90MACs units do not require any special set up.
- All CP AC locomotives (except 9500 - 9582) & (9700 - 9714) and most BNSF locomotives are equipped with Slow Speed Control. UP locomotives are not equipped.
- Trailing DC Traction GM units (SD40-2) require pacesetter slow speed repeater (PSRP) switch set to ON. On CP 9000-9024, this switch is labelled SCIP.

20.1 Using Locotrol IV Console (CP 9583 – 9683) (CP 9100 – 9160)

NOTE: To enter SPEED mode, train speed must be less than 0.1 MPH.

1	Place the throttle in IDLE, center the reverser, apply the independent FULLY and RELEASE the automatic brake.
2	On the Locotrol console, press MODE.
3	Press SPEED. The screen displays the set speed information, the UP and DOWN arrows, and lights the EXECUTE and CANCEL switches. The operator can adjust the set speed in 0.01 MPH increments with single presses of the UP and DOWN buttons. If the UP or DOWN arrow is pressed for more than 10 seconds, the set speed will begin increasing in 0.05 MPH increments.
4	After desired speed is selected, press the EXECUTE.
5	Place the reverser in forward, place the throttle in TRACTION 1 and release the INDEPENDENT brake. The LOCOTROL system will now control power at the desired speed automatically. If train speed is too fast (such as though a sag), apply up to 10 psi of independent brake to control the train.
6	If tower operator requests a stop, place throttle in IDLE. To resume, place throttle in TRACTION 1.
<p>To end slow speed control mode:</p> <p>1 - Place the throttle in IDLE.</p> <p>2 - On Locotrol console</p> <ul style="list-style-type: none"> • press IDLE • press EXECUTE. <p>NOTE 1 - When in distributed power operations, the REMOTE MODE overrides the SPEED CONTROL MODE. If a remote consist has been placed in IDLE or ISOLATE, the remote consist throttle will remain in IDLE during Speed control operations.</p> <p>NOTE 2 - When CP 9583 through 9683 are operating as lead controlling units, then units 9500 through 9582 will not load when operating as a remote locomotive. This is due to the older series of AC-4400 locomotives not being equipped with Locotrol slow speed control features.</p>	

20.2 Using IFD Screen (LEB Units) AC4400's

NOTE: To enter SPEED mode, train speed must be less than 0.1 MPH.

1	Place the throttle in IDLE, center the reverser, apply the independent brake FULLY and RELEASE the AB.
2	On locomotive screen press: <ul style="list-style-type: none"> • DISTR POWER, • DP MAIN, • MODE, • SPEED, • EXECUTE
3	Adjust speed using the SPEED UP and SPEED DOWN keys.
4	Place the reverser in forward, place the throttle in TRACTION 1 and release the INDEPENDENT brake. The Locotrol system will now control power at the desired speed automatically. If train speed is too fast (such as through a sag), apply up to 10 psi of independent brake to control the train.
5	If tower operator requests a stop, place throttle in IDLE. To resume, place throttle in TRACTION 1.
6	To end slow speed control mode: A - Place the throttle in IDLE. B - On MODE screen press IDLE.
NOTE	When in distributed power operations, the REMOTE MODE overrides the SPEED CONTROL MODE. If a remote has been placed in IDLE or ISOLATE, the remote throttle will remain in IDLE during speed control operations.

20.3 Using Slow Speed on ES44AC Locomotives

1	Place the throttle in IDLE, center the reverser, apply the independent brake FULLY and RELEASE the AB.
2	Exit all screens until you are on the Main Operating screen 0000-0, press: <ul style="list-style-type: none"> • SPEED CONTROL, • SLOW SPEED,
3	Adjust speed using the UP or DOWN arrow keys.
4	Press "SLOW SPEED ON" to activate the system. The system will display a prompt to place the throttle handle in Notch 1. Place the reverser in forward, place the throttle in TRACTION 1 and release the INDEPENDENT brake. The Speed Control system will control power at the desired speed automatically. If train speed is too fast (such as through a sag), apply up to 10 psi of independent brake to control the train.
5	If requested to stop, place throttle in IDLE. To resume, place throttle in TRACTION 1.
6	To end slow speed control mode: A - Place the throttle in IDLE. B - On locomotive screen press "SLOW SPEED OFF".
NOTE	When in distributed power operations, the REMOTE MODE overrides the SPEED CONTROL MODE. If a remote has been placed in IDLE or ISOLATE, the remote throttle will remain in IDLE during speed control operations.

Alarms and Displays

21.0 Audible Alarms – Locotrol IV and LEB

The control console includes an audible alarm which sounds to alert the locomotive engineer of alarms or other significant conditions. This alarm device sounds once, twice or three times based on the importance of the condition being reported.

Single Chime	Information only, such as brake pipe test completed.
Double Chime	Alarm or miscompare condition, such as brake warning.
Triple Chime	Major alarm such as sustained wheel slip or locked axle.

22.0 Alarm Displays – Locotrol IV (appropriate remotes will be indicated on console)

Zone	Definition
Screen ID	The left of the top line always displays the identification of the particular screen. This may be SETUP, SYSTEM, REMOTE, etc.
Top Alarms	The center section of the top line displays the two most important alarm conditions in the train. This display is automatically updated as data is detected or received. The field is blank if no alarm conditions exist.
System State	The right of the top line always displays the current state of the LOCOTROL System. This may be LINKING, TEST, IDLE, SPEED, TOWER, or RUN.
General Display	The middle four lines of the display contain data which is display specific to the various screens.
Switch Identification	The bottom line of the display is used to identify the function of the eight touch switches which are immediately below the display. Typically, arrows are used for scrolling or shifting operations.

23.0 Data Display Panel – Locotrol IV (appropriate remotes will be indicated on console)

Indicator	Definition
COMM	A red indicator which flashes whenever radio messages have been interrupted, but not for a period of greater than 45 seconds. It illuminates continuously and the alarm sounds to indicate that no messages have been received for 45 seconds.
FAIL	A red indicator which lights and the alarm sounds to indicate a major system malfunction. Further system operation is not allowed.
WS	A red indicator which lights and the alarm sounds to indicate a continuous wheel slip condition. It lights momentarily to indicate a non-continuous slip.
PS	A red indicator which lights and the alarm sounds to indicate a continuous pinion slip condition. It lights momentarily to indicate a non-continuous slip.
PC	A red indicator which lights and the alarm sounds to indicate the PCS trip condition.
PENALTY	A red indicator which lights and the alarm sounds to indicate a penalty brake condition.
TRACTN	An amber indicator which lights, while using the Independent Motoring feature, to indicate that the remote locomotives are in traction. This indicator will flash if the lead locomotive is in IDLE at the same time.
REDUCED	An amber indicator which remains lighted whenever any remote unit is operated in reduced mode (IDLE, BV OUT, ISOLATE or STOP).

24.0 Alarm Displays – LEB

The location of each alarm is indicated on the display (e.g. "B" indicates alarm at remote).

MU Alarm (white)	General locomotive alarm (e.g. hot engine).
Alarm	New data is on the ALARM screen.
Comm (Yellow)	Communication interrupted for less than 45 seconds.
Comm (Red)	Communication interrupted for more than 45 seconds.
Sys Fail (Red)	Major system malfunction. Emergency brake is applied, further system operation is not allowed.
Whl Slip (Red)	Continuous wheel slip condition. It lights momentarily to indicate non-continuous slip.
PCS (Red)	PC open at lead or remote locomotive.
Traction (Yellow)	If using independent motoring feature (back group), lights when remote is in traction. Flashes if the lead locomotive is in IDLE at the same time.
Reduced (Yellow)	Lights whenever the remote is operated in reduced mode (e.g. IDLE, BV OUT, ISOLATE or STOP).
Lock Axle (Red)	Indicates a locked axle condition

7