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Canadian National Railways
Great Lakes Region

REGIONAL TRANSPORTATION CIRCULAR NO. 77-107
SUBJECT: Unintentional Release of Train Brakes.

TO: All Operating Employees.

These instructions are a re-issue of the revised System Circular No. 1, originally dated 23 June 1972.

- A. From time to time there have been reports that unintentional releases of train brakes have occurred with freight equipment, particularly with long trains, under the following circumstances:
- 1) DURING NO. 1 AND NO. 2 BRAKE TESTS.
 - 2) WHEN UNCOUPLING BRAKE PIPE.
 - 3) AFTER COUPLING ONTO A REAR PORTION OF A TRAIN LEFT IN EMERGENCY (I.E. FOLLOWING A BREAK-IN-TWO).
 - 4) DURING SERVICE REDUCTIONS WHEN BRAKE SYSTEM NOT FULLY CHARGED (CYCLE BRAKING).
 - 5) USE OF GRADUATED RELEASE.
 - 6) BRAKE PIPE CUT-OUT VALVE ON 26L BRAKE EQUIPMENT POSITIONED IN PASSENGER POSITION WHEN HANDLING FREIGHT EQUIPMENT.
 - 7) 24L BRAKE VALVE WITH A PRESSURE MAINTAINING FEATURE.
 - 8) PRESSURE MAINTAINING AND ABD CONTROL VALVES COMBINED WITH FLANGER OPERATION.
- B. Unintentional releases are a consequence of the normal operation of a "Pressure Maintaining Feature" in the automatic brake valve and the normal operation of ABD, and sometimes AB, control valves on freight cars.
- a) The emphasis will be on procedures to avoid unintentional releases which can lead to unnecessary delay in operations and difficulties with train control.

C. Procedures to prevent unintentional releases of train brakes.

1) During No. 1 and No. 2 brake tests.

When the 15 pounds service reduction is requested, the automatic brake should be placed in service position. However, in the event the brake system is not fully charged close attention must be given to the opening of the service exhaust. When it opens the equalizing reservoir should be reduced 15 pounds from its reading at the moment the service exhaust opened.

2) When uncoupling brake pipe.

A full service reduction must first be made with the automatic brake valve, and after the service exhaust has ceased the angle cocks at the cut may be closed and air hose disconnected. The angle cock on the equipment to be left standing must be opened slowly to prevent emergency and left open fully.

3) After coupling onto a rear portion of a train left in emergency (i.e. following a break-in-two)

Before air hoses are recoupled, a brake pipe reduction of at least 30 pounds must be made with 26L brake equipment by moving automatic brake valve handle beyond the service zone towards and through suppression position to obtain and hold a 30 pound reduction from the equalizing reservoir. The air hoses may then be coupled after which the angle cock on front portion of train should be opened slowly.

On grades the use of hand brakes or retainers may be required to hold the train for the time required to permit a sufficient recharge before movement commences.

4) During service reductions when brake system not fully charged (cycle braking)

- a) When a brake application (reduction and release) is made when the brake system is fully charged the initial reduction should not be less than 6-8 pounds with sufficient time for the brakes to apply throughout the length of the train before releasing brakes.
- b) However, if a service reduction is necessary when the brake system is not fully charged, the equalizing reservoir should be further reduced by the amount of the desired reduction from its reading at the moment the service exhaust opened.

This procedure will provide desired braking response for at least two applications when the brake system is not fully charged.

5) Use of graduated release

- a) Graduated release can only be used with passenger equipment and with brake equipment properly set for passenger. In no circumstances should a partial or "graduated release" of freight train brakes be attempted.
- b) Attempts to use graduated release in freight service can lead to sticking brakes but more seriously it can lead to an unintentional release of brakes.

6) Brake pipe cut-out valve on 26L brake equipment positioned in passenger position when handling freight equipment

If the service exhaust fails to close with the automatic in service position and the cut-out valve in freight position, the brake pipe cut-out valve may be moved to passenger position, however, no attempt must be made to move the automatic brake partly towards release position. To do so can result in an unintentional release of train brakes.

7) 24RL brake valve equipped with a pressure maintaining feature

Immediately following a service reduction with the automatic in lap and when the service exhaust closes, an additional slight reduction should be made (shimming or shaving) to prevent an equalizing reservoir pressure increase and a possible unintentional train brake release.

8) Pressure maintaining and ABD control valves combined with flanger operation

- a) When possible lead units in a locomotive consist equipped with a 26L brake valve will be avoided on freight trains with a flanger in service at the rear.

If the use of a 26L brake equipped unit is unavoidable, the locomotive engineer must use the following precautionary procedures.

When a brake pipe reduction has been made and brakes are applied, advantage must be taken of every means available to detect if the brakes are unintentionally releasing.

The flow meter and a change in braking retardation are indications that brakes are releasing. In this event the engineer must immediately make a further service reduction of the amount desired to control the movement.

The train should be stopped to permit a recharge of the brake system if more than two reductions are required to control the movement.

- b) Unintentional release is not possible if the lead unit is equipped with a 24RL brake valve utilizing a pressure maintaining feature, if the pressure maintaining feature is cut out.

The procedures herein prescribed are additional precautions to existing regulations.

Please be governed accordingly.

Your Master Mechanic will discuss with you, at every opportunity, all procedures to prevent unintentional releases of train brakes in various circumstances.

A. A. Smail
General Superintendent
Transportation

(List RT)

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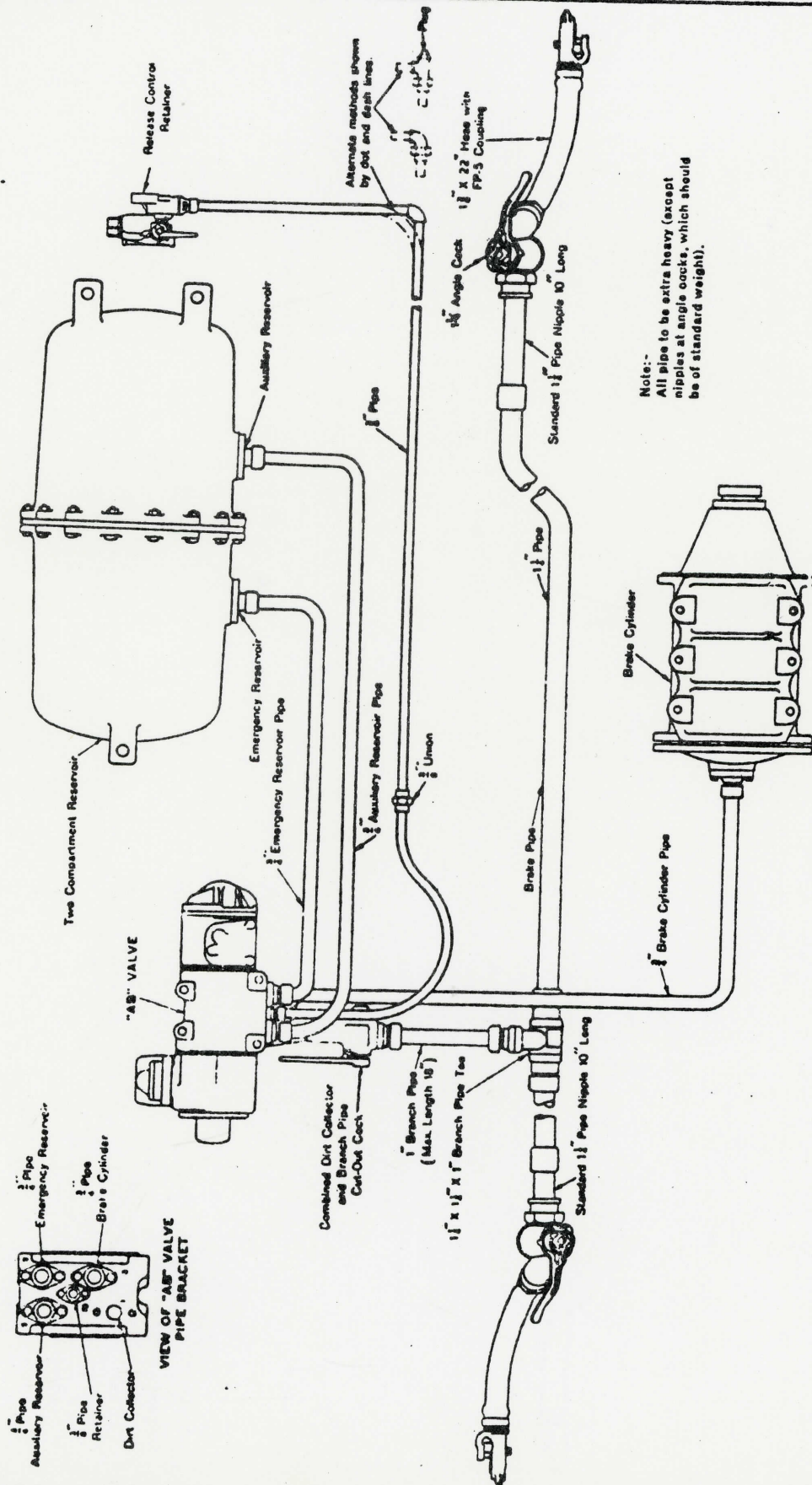


Plate 10 Piping Diagram of the Complete "AB" Freight Car Brake Equipment.

OPERATION OF AIR BRAKES AND PREVENTION OF UNINTENTIONAL RELEASESA type of Unintentional Release

1. Due to characteristics incorporated in the ABD car brake system, an increase in pressure of the trainline of $1\frac{1}{2}$ to 2 psi, from any source, when the brakes are applied, will activate the Accelerated Release Valve which in turn can release brakes on adjacent cars. While most unintentional releases of brakes occur with ABD brakes, releases can also occur with AB brakes. ABD equipped cars can be identified either by the stencil on the car which will indicate the type of brakes or by the bleed rod connected to the control valve.

AB BLEED ROD

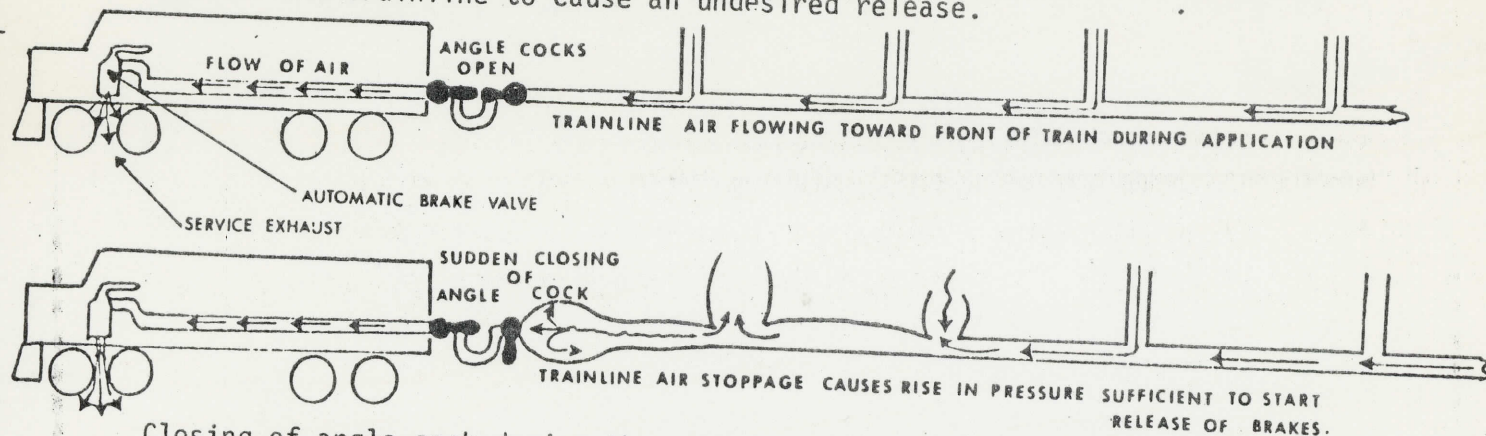
ABD BLEED ROD

2. Example:

When train brakes are being applied by the engineman with the automatic brake valve in the cab the angle cocks at the point where the train is to be parted must not be closed until the service exhaust has ceased in the cab. Both angle cocks may then be closed, the hoses disconnected and slowly open the angle cock on the portion of the train to be left. Leave this angle cock open.

3. Illustration:

How the closing of an angle cock when air is exhausting creates a pressure rise in the trainline to cause an undesired release.



Closing of angle cock during the exhausting of air causes sudden air pressure rise at point of closure. This pressure rise can be sufficient to activate the accelerated release valve on ABD brakes and causes brakes to release.

4. The same effect as in Example 2 occurs when an angle cock is opened on a cut of cars to stop them from rolling or running away and it is then closed. The angle cock should be opened slowly and left open.
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