

MANAGER, BALLARAT BRANCH

ENGINEER & MANAGER, ELECTRICITY SUPPLY

29th January, 1954

TRAMWAYS - OPERATIONS:

We are in complete accord with the views expressed in your letter (AVM/MAH. 53/15327) of 21st December, 1953, to the Manager, Bendigo Branch, and are thus opposed to the two suggested alterations to the proposed "Rules Governing Employees".

In this Branch, the motorman of a disabled tram opens the controller cover solely to cut out defective motors, and this can be effected in complete safety with the circuit breaker in the "off" position (vide Clause 2 of Section A of the "Instruction Manual for Traffic Employees".)

The inspection, adjustment and repair of controllers is the responsibility of one particular Shedman during routine servicing of tramcars in the Depot, and on the rare occasions that controller adjustment is necessary in traffic, such is performed by this employee and/or the Depot Foreman.



tramcars. If this is correct there must be several alternatives available to make these equipments "safe" because adoption of a rule requiring pole removal would almost certainly lead to a request for emergency lighting provision on all cars.

We would like to hear further from you on this matter and to broaden such further consideration the item you have raised has been referred also to the other branches.

DEPARTMENTAL

STATE ELECTRICITY COMMISSION OF VICTORIA

WORKS SUPERINTENDENT

ELECTRICITY SUPPLY DEPARTMENT

Date 22nd January, 1954.

To MANAGER, BALLARAT BRANCH.

Subject -

TRAMWAYS OPERATION -
RULES GOVERNING EMPLOYEES.

With regard to the Bendigo suggestion (Ref. No. 1274) that the poles of trams in service must be lowered before adjusting electrical apparatus, the following comments are submitted:-

1. Controllers are inspected and repaired in the depot during car inspections by a specific shedman, responsible to the foreman for efficient operation of all controllers. Under this system, practically never are adjustments required under traffic conditions.
2. In the unlikely event of adjustment being required in traffic, the repair would be executed by depot personnel, who in the normal manner would ensure in single truck cars that the circuit breaker was in the "off" position and in the double bogies that the automatic line breaker plus the trolley finger switch was likewise "off" before attempting any repairs.
3. Traffic personnel only open the controller cover to cut out motors which can be done with perfect safety, provided the circuit breakers are in the "Off" position.

In conclusion, under operating conditions existing in Ballarat at the present time, it is not considered necessary to have the suggestion included in the new "Rules Governing Employees". Opportunity is taken to stress the need for publication of the Rules at the earliest possible moment.

Therds, 28.1.54

B/T/S expressed his complete accord with above opinion of the W/S.

[Signature]

[Signature]

open" or relay operated line breakers on tramcars. If this is correct there must be several alternatives available to make these equipments "safe" because adoption of a rule requiring pole removal would almost certainly lead to a request for emergency lighting provision on all cars.

We would like to hear further from you on this matter and to broaden such further consideration the item you have raised has been referred also to the other branches.

ELECTRICITY SUPPLY DEPARTMENT

OF VICTORIA

Copy for Manager, Ballarat Branch.

ENGINEER AND MANAGER.

MANAGER, BENDIGO BRANCH.

21st December, 1953.

TRAMWAYS - OPERATIONS:

It is desired to acknowledge your memorandum dated 14th December (NGD:VES) with the corrections etc. on the proposed "Rules Governing Employees". The ultimate paragraph is noted and some explanation of the reasons for the omission is desirable because this is linked with the item you submit for inclusion in Clause B, line 7, on page 3 of the draft. You will appreciate that rules must be practical and capable of being reasonably carried out without exception and the requirements of removing the trolley pole from the overhead wire by a motorman before opening say a controller cover has its best conditions in daylight and when a conductor is available to assist. On the other hand the worst conditions are at night on a one-man tram in a dark location and adverse weather. Any passengers on the tram would not appreciate plunging the tram into darkness and the motorman would have no light to facilitate his operations. In practice, an employee has little idea as to the cause of the fault which has immobilised his tram and his investigations start with cutting out motors and then may be the testing of the two controllers. If he isolated the fault in his first action he would be lucky as he had to remove and replace the pole once only. If he is not so lucky he may be required to remove and replace the pole several times in carrying out his tests. The locating of the trolley wire in dark locations is not always easily accomplished. With regard to providing light for the assistance of the motorman we could instal outlets for extension lamps from the tail light battery circuit or we could supply torches but the cost and worry of maintenance for such portable items can be easily imagined. On the other hand we can limit, by regulation, the adjustments made to electrical apparatus by motormen to those where adequate and standard protection is available and in which the employee is or should be fully trained. In the case of controllers, the motor cut outs are remote from the trolley terminal and finger and are "dead" when the controller is in the "off" position.

We do not subscribe to a motorman adjusting controller contact fingers especially on the main drum where the trolley finger is located and involves opening the arc shield. In any case it should be seldom (if ever) necessary for a motorman to open his controller other than to cut out motors. The question of requiring the motorman to at all times remove the trolley pole from the overhead before opening a controller cover or replacing a fuse or lamp possibly had its origin from instances of mechanical "failure to open" of relay operated line breakers on maximum traction type tramcars. If this is correct there must be several alternatives available to make these equipments "safe" because adoption of a rule requiring pole removal would almost certainly lead to a request for emergency lighting provision on all cars.

We would like to hear further from you on this matter and to broaden such further consideration the item you have raised has been referred also to the other branches.

PROVINCIAL TRAMWAYS

Rules and instructions for the Guidance of Employees engaged in the operation of the services and in the Maintenance of Rolling Stock and Tracks.

Section 1 - Safety:

- (A) Safety on the road (a) on the road,
 (1) A tramcar being on long rails cannot turn or swerve, thus the action to be taken by drivers of tramcars is almost entirely confined to stopping the tram. It is therefore essential that a full appreciation of the
- (b) Electrical Apparatus,
 (c) Broken Trolley Wires.

Section 2 - Track Maintenance Section.

Section 3 - Rolling Stock Maintenance Section.

Section 4 - Operations (Traffic) Section.

Foreword:-

Effective organisation in any undertaking depends upon adherence to definite rules and principles without which there would be confusion and chaos leading to friction, discontent and often personal risk of accidents. These instructions, therefore, are designed to ensure a safe, efficient and courteous service to the general public and to safeguard the interests of employees. Each tramway employee is required to have a copy of this book in his possession, to keep it handy for reference; and to observe the various requirements appropriate to his duties and classification. Ignorance of an instruction will not be acceptable as an excuse for non-observance of same. These instructions may be varied by special order issued by a Branch Manager and such special order will over-ride any clause in these instructions with which it may conflict. No instruction or special order shall be construed so as to infringe any Commonwealth or Victorian State law. It is required that the address of each employee shall be registered at the Branch office and any change must be promptly advised to the Senior Traffic Inspector or appropriate Section Foreman.

CONDITION OF RAILS:- To stop any moving vehicle depends to a very large extent upon the grip of tyres on the road in the case of motor vehicles, and wheels upon the rails in the case of tramcars. Any slip or skid of the wheels increases the distance travelled before a stop is effected. It naturally follows that the amount of brake force that can safely be applied to any vehicle depends entirely upon the condition of the road or rail surface. If the surface is good and clean (the cleanest tram rail is when it is being washed with heavy rain) the maximum brake force may be used, but when it is greasy or slippery (misty rain after a dry spell of weather, leaves or pine needles falling on the track) only a very gradual application of the brakes will avoid putting the tram into a skid.

all the factors of speed-weight-gradient and the necessary representation of the same and it follows that the development of a tram road must take

Society members.

Section 1."Safety First"

- "Safety" is to be the first consideration of all ^{workers} employees.
 "Safety for themselves"
 "Safety for passengers"
 "Safety for other road users"
 "Safety for fellow employees" ^{workers}

The co-operation of all concerned is essential for the maintenance of these precepts. Remember! Accidents don't just happen. They are caused.

(A) "Safety on the road"

- (1) A tramcar being confined to movement along rails cannot turn or swerve, thus the action to be taken by drivers of tramcars to avoid traffic accidents is almost entirely confined to stopping the tram. It is therefore essential that a full appreciation of the factors which determine the distance in which a tram may be brought to a standstill must be always recognised. They are as follows:-

- (i) Time available.
- (ii) Speed
- (iii) Weight (or load)
- (iv) Slope or gradient
- (v) Condition of rail surface.

TIME:- The distance travelled in one second is roughly $1\frac{1}{2}$ times the speed in miles per hour. For example 10 mph. = 15 feet per second, 30 mph. = 45 feet per second. The extent to which the driver of a tram is alert is therefore reflected in the distance taken to stop the tram in emergency.

SPEED:- It is obvious that a greater distance is required in which to stop a tram (or any vehicle) as the speed increases.

WEIGHT:- The weight of a loaded tram is increased considerably. 40 passengers @ average of 8 stones = 2 tons, so that a greater distance is required to stop a full tram than an empty tram.

SLOPE OR GRADIENT:- This is an important factor in affecting a stop with any vehicle. When on an upgrade the distance is reduced, but on a down grade the distance is increased and is proportionate to the steepness of the grade.

CONDITION OF RAILS:- To stop any moving vehicle depends to a very large extent upon the grip of tyres on the road in the case of motor vehicles, and wheels upon the rails in the case of tramcars. Any slip or skid of the wheels increases the distance travelled before a stop is effected. It naturally follows that the amount of brake force that can safely be applied to any vehicle depends entirely upon the condition of the road or rail surface. If the surface is good and clean (the cleanest tram rail is when it is being washed with heavy rain) the maximum brake force may be used, but when it is greasy or slippery (misty rain after a dry spell of weather, Autumn leaves or pine needles falling on the tracks) only a very gradual application of the brakes will avoid putting the tram into a skid.

COMBINED EFFECT:- All the factors of speed-weight-gradient and bad rail conditions may be present at the same time and it follows that the development of a true road sense requires that