1st May, 1957. LRT.

TRAMWAY MAINTENANCE CONFERENCE - 1957

PREPARATORY NOTES:

Item No.	Details	Conference Remarks
1956 No.13	Trolley Ropes - All sample ropes which were received have been fitted, results to date are as follows:- No.1 Test- Log Line fitted to Car No.35 on 8.8.'56, discarded 11.3.'57 - 11,250 miles. Test No.2- Cotton Sash Cord fitted to car No.41 on 1.7.'56, discarded 2.1.'57 - 15,915 miles. Test No.3- Log Line fitted to Car No.19 on 8.8.'56, discarded 21.1.'57 - 10,677 miles. Test No.4- Cotton Sash Cord fitted to Car No.14 only lasted one day. Test No.5- Flax Cord-Millers No.10 - Still in operation.	
1957 2	(A) Stocks of Rail held at no charge are as follows: New- 96 lb.BSS, Straight -240' In various lengths. 96 " " Curved - 78' " " " 80 " BHP, Straight -175' " " " 35 " " Check - 50' " " " Second-hand:(ex. Geelong)- 90 lb. Grooved rail - 41' In various lengths. 50 " "T" rail -460' " " " Second-hand- Odd weights and lengths - 50'. ..... Regarding rail profile survey, due to work of higher priority, no further progress has been possible.	
	(B) The main reason for investigating joining of rails by the Arc welding process was to endeavour to effect immediate economies in man-hours expended:- (i) Upon repairs to fractured rails, and (ii) Joining of rails in sections of track which were being re-laid; and also future economies in track Maintenance. As with the welded join, flexing does not occur at the ends of the rail and therefore fractures in bolted fish-plate area are eliminated. During the past year some twenty (20) welded joins have been made on tramway rails and two(2) on the main Victorian Railways track. No failures have occurred to date. During the renewal of 207' of single-track in Bridge Street, some difficulty was experienced with rail alignment due to the old procedure being followed, of lightly tightening the fish-plates, then packing the sleepers near the join to keep the alignment. With welded joins alignment must be correct and rails lightly dogged before welding is commenced. To repair a fractured rail with fish-plates, from the time the fracture is reported until the job is finished takes eight (8) man-hours. To effect repairs with the Arc welding technique takes two (2) man-hours, thus the saving, per join, is six (6) man-hours, or 75%.	
	(C) On the Mair St-Lydiard Street intersection approx. 20' of concrete setts have been laid down and setts were constructed from a mix of screenings (4) sand (2) and cement (1), and set in compo upon the concrete foundation raft and top-dressed with Bitumen.	

(CONT'D.)

Item No.	Details	Conference Remarks
3	(A) Comprehensive Brinell hardness tests were carried out during last year to determine the average hardness of new tyres, brake-shoes and rails, and also of tyres, brake-shoes and rails which had been in service for a considerable time. The order of hardness for New items were as follows:- (1) Brake-Shoes - 266 Brinell Hardness (2) Rails - 243 " " (3) Tyres - 231 " " For items which were in service:- (1) Tyres - 373 Brinell Hardness (2) Rails - 310 " " (3) Brake-Shoes - 266 " " Further tests are in progress to determine the relationship between mileage and work-hardening of tyres, and between time and work-hardening of rails. From results to date, Tyres remain at 231 until 500 miles have been covered.	
	(B) Tyres on hand at present are - Pony 20" - 25 off. and Drivers 33" - 32 " 1957 - December, 1958 requirements would be: Pony 20" and Drivers 30" - NIL.	
	(C) Tram No.32 was fitted with second-life tyres on 20.3.'57 and has now completed over 3,000 miles, no difficulties have been experienced to date. Details of the heavier flange are shown upon the sketch distributed at the commencement of the Conference.	
	(D) (i) Brakes are adjusted three times per week on single truck cars to supply gauges ½" and 3½" Piston travel. Double Bogie brakes are adjusted once per week to supply 4" piston travel gauge, max. allowable is 4½". (ii) It is understood that the brake-shoe holders were altered in former times to enable the blocks to wear evenly. (iii) 1" thickness on top of block equals one weeks operation, or 600 miles.	
	(E) No breakages have occurred in the Ballarat System and as the automatic slack adjusters and brake-gear mechanisms are in good order no breakages are expected under normal operating conditions.	
	(F) Renewable cups. Samples supplied. No difficulties.	
	(G) Steam cleaner used at six-monthly intervals upon the undercarriages of all service trucks, also at the commencement of truck overhauls. The time taken to clean the undercarriages of 20 service cars by one operator is five days and the time taken to clean down an undercarriage undergoing overhaul is four hours. The latter operation in former times used to take up to four days for two men (64 man-hours)and the then completed job could only be regarded as a second-class effort.	

(CONT'D)

Item No.	Details	Conference Remarks
4	(A)	
	(B) Paint-work: Practically all re-decorating of tramcars is undertaken at the present time as precervative treatment. Two coach painters carry out this work on the present fleet which, incidently, is considerably greater in numbers than in former times when Depot strength was three painters. During the year one painter earned £780 and the other £839 which gives a total of £1,619. 60½ gallons of painting materials costing £133:3:10d., and £30 worth of sundries were used, which equals £166:3:10d., and the Store Expense for materials was £32:11:2d., which makes a total cost for materials of £195:15:-. Total cost therefore of Depot painters from 1956 to 1957 equals £1,619 plus £190:15:-, total £1,814:15:-d. In summarised form, the pros and cons of the suggestion appear to be as follows:- Pros- Saving of maintenance expenditure equals £1,800:-:-. Cons- Leaking roofs, during six months of the year (11 were treated in 1955 and 13 in 1956); Blistering of cars when trams are parked on the island in Sturt St., during the Summer months. Dingy appearance, particularly around entrances. Abandonment of Commission's reasonable standards of maintenance. Discarding of employees who have, in the past, rendered good service. In the event of the System continuing to operate beyond a period of three years, and assuming that all painting had been suspended for that period, nearly all roofs would, by then, be leaking badly and any attempt then made to regain the present uniform standard of paintwork which has been achieved over a long period would prove vertually impossible at reasonable costs. The corollary to suspending painting would be to suspend all external cleaning of tramcars as no useful point ould be served in expending valuable man-hours endeavouring to keep clean lifeless paintwork and bare woodwork.	
5	(A) The Autumn is not considered the best time of the year to conduct paradichlorobenzine tests but to date results have been satisfactory. The real test will come in the Springtime.	
6	(A) - (B) -	
7	(A) - (B) -	
8	(A) -	
	(B) The future of this System not only includes maintenance policies but also to a very large extent maintenance personnel. Temporary repairs are successful if they are, in fact, temporary, otherwise they become inefficient, costly and generally undesirable.	
	(C) Savings have undoubtably been effected, sleepers; rails; axles, and wheels; and miscellaneous spares ex. Geelong have been used during the past year in the Ballarat System. No record has been kept regarding the	

(CONT'D)

Item No.	Details	Conference Remarks
8 (Cont'd)	(C) actual monetary value, but the fact that the Budget -Progressive Monthly Maintenance Costs- are below target figures, is attributed to savings effected by the use of spare equipment ex. Geelong. Also, with the commissioning of equipment which was transferred, many maintenance jobs, such as the building up of rails, by electric welding and dressing of same, and lifting bodies from undercarriages during rolling stock repairs, have been greatly expedited.	
	(D)Standardisation is regarded as desirable, but at this generally assumed late stage in the life of tramways, the time and expense which would be involved is not considered warranted.	
	(E) Rolling stock- Reduced Tyre Mileages- From the Card System, which is used to record all aspects of tyre maintenance (One card per pair of wheels), the past year's operations were reviewed and the following average mileage figures ascertained:- Average Mileage 6 prs. Tyres which completed their 1st life. 29,882 say 30,000 4 " " " " " 2nd life. 29,144 say 29,000 2 " " " " " 3rd life. 88,857 say 89,000 The following information was also extracted- In 1950, the average Mileage equalled 127,780 1951, " " " " 130,500 1952, " " " " 104,254 1953, " " " " 101,845 1954, " " " " 105,009 1955, " " " " 96,462 1956, " " " " 102,273 and 1957, " " " " 89,000. It therefore appears that the average mileage figures have dropped by approx. 39,000 miles, or 33%, since 1950 until the present time (seven years). When considering the problem of reduced mileage, the following possible contributory factors were considered:- (1) Pairs of tyres worn to different diameters. (2) Tyre grips wearing excessively hollow. (3) Brinell hardness of tyres. (4) The judicious re-turning of flange profiles. (5) Flange running. (6) Squaring of undercarriages. (7) When conditions of tracks (i.e. up to ¼") worn off the inside face of the tread of the rail, the gauge thuse becoming ½" wide causing excessive lateral movement of wheels of which in turn results in increased wear of flanges. In the Ballarat System we are of the opinion that the greatest single contributory factor is No.7.	