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Your Ref: TP/IP/32267/2020
Our Ref: CI/TPD20012452/P

13th January 2021

Fatal Accident Investigation Team
Traffic Police Department
Singapore Police Force
10 Ubi Avenue 3
Singapore 408865

MECHANICAL INSPECTION REPORT OF MOTOR LORRY YN 4215B

1. We refer to your request on 11th November 2020 to conduct a physical inspection of a Motor Lorry bearing registration number YN 4215B (herein referred to as "**Motor Lorry**"), which was involved in a road traffic accident on 30th July 2020.

2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Lorry that may have contributed to the accident.

3. Following the request, we had carried out a physical inspection of the Motor Lorry on 12th January 2021 at the premises of Traffic Police vehicle pound, 517 Airport Road Singapore 539942. We now set out below our observations and comments with respect to this inspection.

General Condition

4. The mileage of the Motor Lorry was not able to be recorded as the battery of the Motor Lorry could not be access due to the damage the front cabin had sustained as a result of the accident at the time of our inspection.

5. The Motor Lorry was observed to have sustained damage at its front cabin structure portion. Its front windscreen, front body panel, front bumper, right and left doors as well as both front headlamps was damaged as a result of the accident. See photo 1 - 8 below.

Photo 1 shows the general view of the rear portion of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be unaffected by the accident.

Photo 2 shows a general view of its front cabin structure portion. Its front windscreen, front body panel, front bumper, right and left doors as well as both front headlamps was damaged as a result of the accident.

Photo 3 shows a close up view of the front body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained damages to its front cabin body structure, front windscreen (red circle) and front cabin body panel (yellow circle) as a result of the accident.

Photo 4 shows a close up view of the front body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained damages to its front bumper (circled) and both its front headlamps (arrowed) as a result of the accident.

Photo 5 shows a close up view of the right body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained damages to its right door (circled) as a result of the accident.

Photo 6 shows a close up view of the left body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained damages to its left door (circled) as a result of the accident.

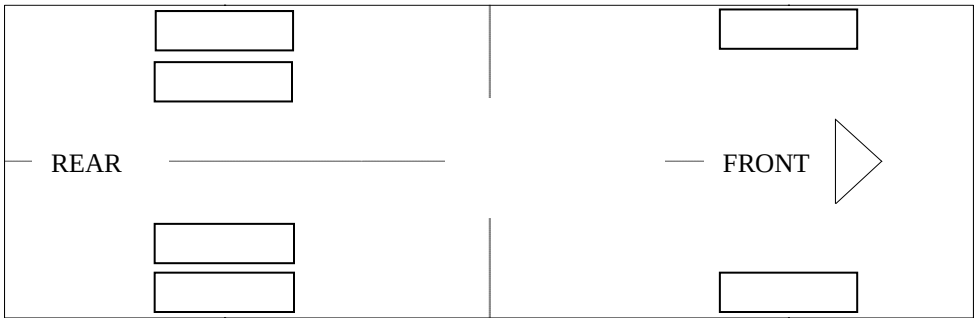
Photo 7 shows a general view of the right portion of the Motor Lorry at the time of our inspection. The Motor Lorry right portion was observed to be unaffected by the accident.

Photo 8 shows a general view of the left portion of the Motor Lorry at the time of our inspection. The Motor Lorry left portion was observed to be unaffected by the accident.

Tyres and Wheel Rims

6. The 6 tyres of the Motor Lorry were observed to be in serviceable condition and sufficiently inflated for vehicular operation. I did not find any tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 6 tyres. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Motor Lorry were recorded as follows:-

Ceat 7.00 R16 (1.8mm) Ceat 7.00 R16 (7.8mm)



Ohtsu 7.00 R16 (0.4mm) Ceat 7.00 R16 (5.4mm)

7. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 9 – 12 below.

Photo 9 shows the condition of the front right tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 5.4mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

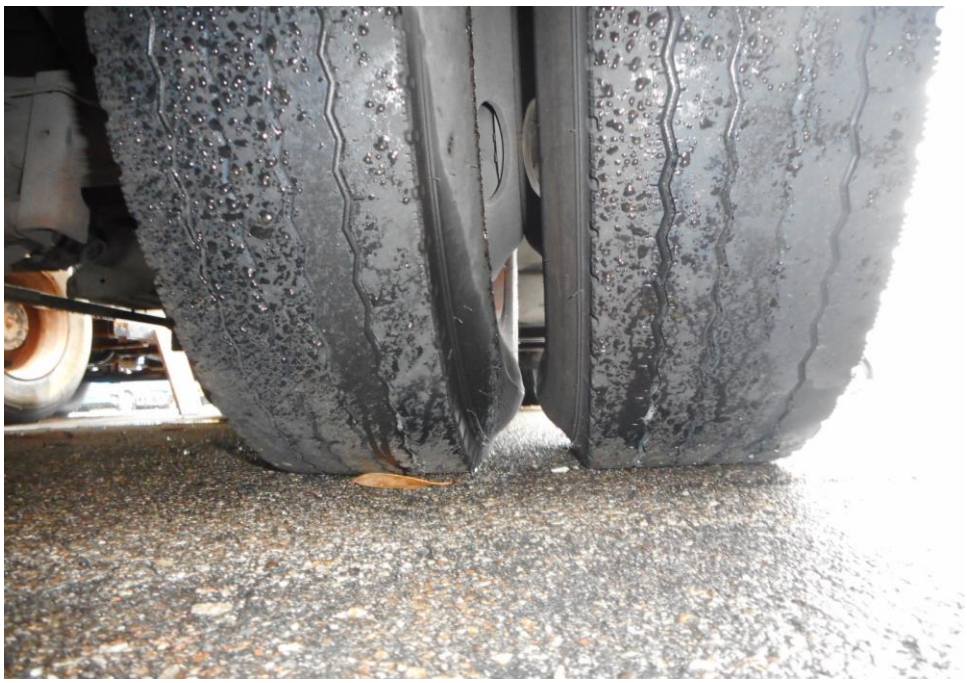


Photo 10 shows the condition of the rear right tyres of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 0.4mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 11 shows the condition of the rear left tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 1.8mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

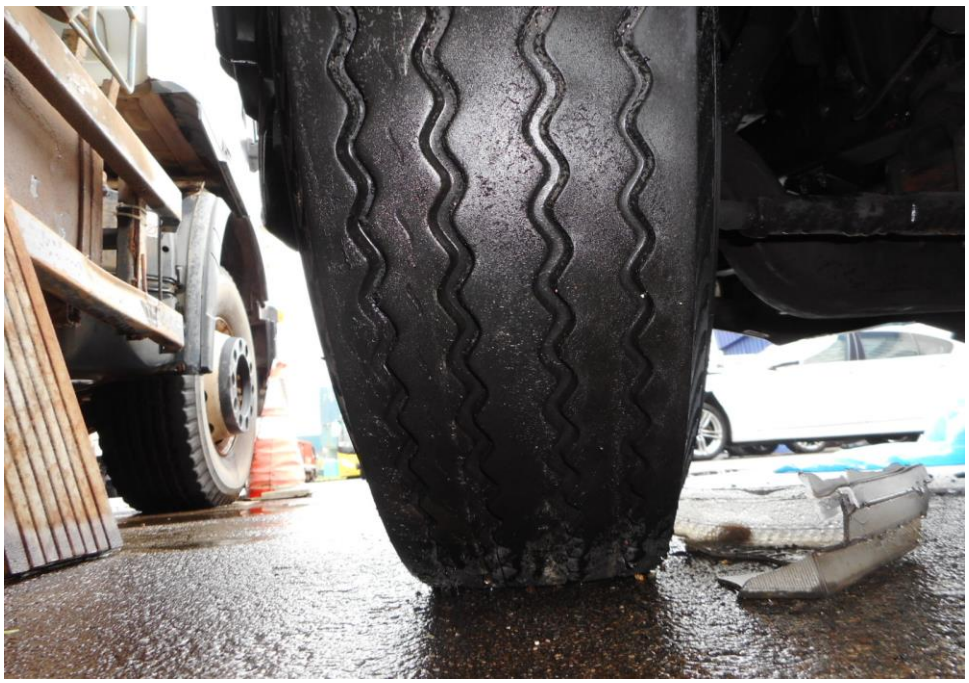


Photo 12 shows the condition of the front left tyres of the Motor Lorry, which observed to be in serviceable condition with remaining tread depth of approximately 7.8mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation.

Engine Compartment & Operating Fluids

8. Upon examination of the Motor Lorry's engine compartment, we had observed that all the parts, components and fluids could not be inspection as due to the damage induced has crushed and deformed the cabin of the Motor Lorry which immobilized its opening and viewing, however we are able to observed the brake fluid reservoir, engine coolant reservoir and the power steering fluid of the Motor Lorry and it was observed to be sufficient level without any visible contamination.

9. Our subsequent checks on the underside of the Motor Lorry also revealed no sign(s) or indication(s) of fluid leak and/or fluid stain(s). Visually, the various undercarriage components of the Motor Lorry were all observed to be intact and without any visible damage. See photo 13 – 17 below.

Photo 13 shows the induced damage to the cabin of the Motor Lorry's which immobilised the opening and viewing (arrowed) of the various parts and components inside the engine compartment, a result of the accident.

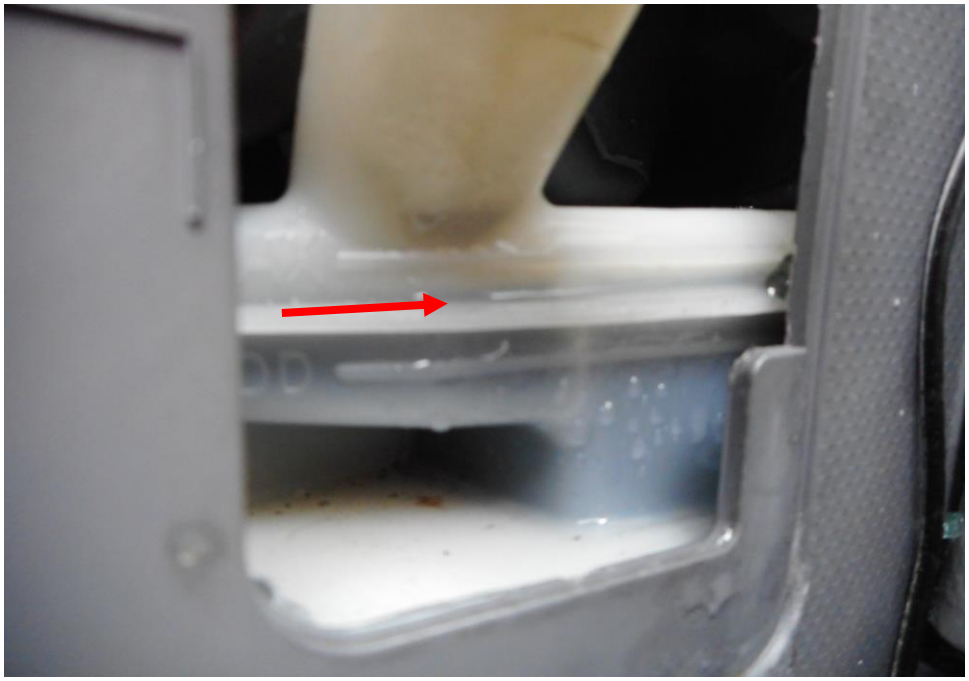


Photo 14 shows the brake fluid reservoir of the Motor Lorry at the time of my inspection. The brake fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 15 shows the engine coolant reservoir of the Motor Lorry at the time of my inspection. The engine coolant was observed to be of sufficient level and without any visible contamination.

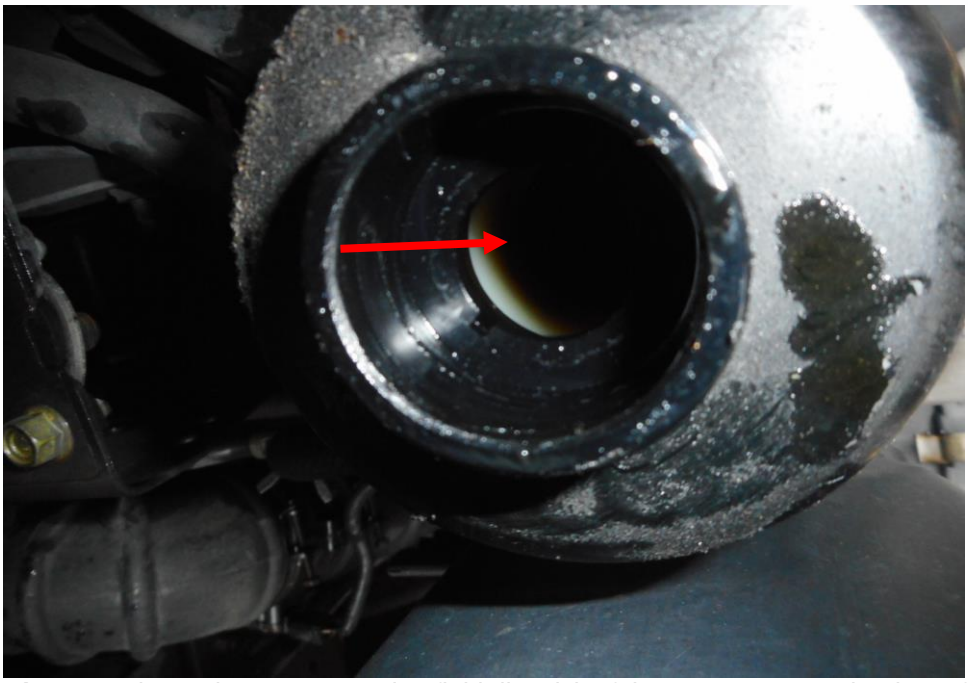


Photo 16 shows the power steering fluid dip stick of the Motor Lorry at the time of my inspection. The steering fluid oil was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 17 shows the undercarriage of the Motor Lorry, at the area where the engine housing and transmission housing are located. . I did not find any sign(s) or indication(s) of fluid leak and/or fluid stain(s) on the underside of the Motor Lorry.

Steering System & Braking System

10. For this inspection, I was not able to conduct any tests on the steering system of the Motor Lorry as the Motor Lorry was not started up.

11. However, static brake tests conducted on the Motor Lorry revealed no abnormality. The brake booster had responded well to the various tests conducted. There was also no abnormal movement of the brake pedal when it was depressed. In general, the static brake tests had suggested that there was no internal leakage of pressure/vacuum in the braking system of the Motor Lorry.

12. My visual examination of the various steering and braking components which had included the rack and pinion, tie rods, tie rod ends and ball joints, brake hoses and brake pipes had revealed that these components were all generally intact. See photo 18 - 23 below.

Photo 18 shows the various undercarriage components at the front right wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various steering components were all found to be intact, suggesting that the steering system of the Motor Lorry was likely to be in serviceable condition at the material time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 19 shows the various undercarriage components at the front left wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various undercarriage components of the Motor Lorry were all found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 20 shows the brake pipe (arrowed) at the rear right wheel of the Motor Lorry. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Lorry. My static tests of the Motor Lorry's braking system, along with my visual examination of the various mechanical components in the braking system, had indicated that there was no internal leakage of pressure/vacuum.

Photo 21 shows the brake pipe (arrowed) at the rear left wheel of the Motor Lorry. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Lorry. My static tests of the Motor Lorry's braking system, along with my visual examination of the various mechanical components in the braking System had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Motor Lorry was likely to be in serviceable condition at the material time of accident.

Photo 22 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Lorry. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 23 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Lorry. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Electronic Safety / Warning Indicators

14. The Motor Lorry's automatic self-test of the functionality of its various electronic operating systems was not able to be conducted as the engine of the was not started up due to the blockage to access the battery as a result of the accident.

Seat Belts

15. The Front right, front left, rear right and rear left seat belts of the "Motor Lorry" were tested and all the seat belts were able to be fastened securely into the respective pre-tensioners that were fitted at the sides of each seat.

Operational Behaviour of the Motor Lorry

16. An operational test by driving the Motor Lorry was not conducted as it was unsafe to be operated due to the damage it sustained to the front cabin and the Motor Lorry was not started up due to the blockage to the battery as a result of the accident.

Conclusion

17. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Lorry that may have contributed to the accident. The extent of damage that it had sustained had prevented me from carrying our any operational test(s) and/or static test(s) to its engine system, transmission system, steering system and suspension system.

18. However static brake tests was able to be conducted and In general our visual inspection of the mechanical components of the Motor Lorry's braking system appear to suggest that is braking system was in serviceable condition at the material time of accident and there was no leakage found at the braking components of the Motor Lorry

19. The 6 tyres of the Motor Lorry were found to be in serviceable condition. I did not find any tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 6 tyres. The 6 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 0.4mm to 7.8mm.

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