



Your Ref: TP/IP/26803/2018  
Our Ref : CI/TPD18011347/Z

20<sup>th</sup> August 2018

**Fatal Accident Investigation Team**

Traffic Police Department  
Singapore Police Force  
10 Ubi Avenue 3  
Singapore 408865

**MECHANICAL INSPECTION REPORT OF MOTOR LORRY YP 6558M**

1. We refer to your request on 17<sup>th</sup> May 2018 to conduct a physical inspection of a motor lorry bearing registration number YP 6558M (herein referred to as "**Motor Lorry**"), which was involved in a fatal road traffic accident on 15<sup>th</sup> May 2018.
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 13<sup>th</sup> June 2018 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 at the time of our inspection was recorded as 33363km.
5. The Motor Lorry was observed to have sustained minor impact at its front right bumper. Only stain marks was observed on the front right bumper as a result of the accident.
6. This was likely due to the consistency of the accident's case facts that the Motor Lorry was travelling along Kaki Bukit Avenue 1 towards the direction of Bedok Reservoir on lane 2 of a 2 lanes road. Upon reaching the signalised cross junction of Kaki Bukit Avenue 1 X Kaki Bukit Road 4, traffic light in his direction was green only when he subsequently made a left turn. Halfway making the left turn into the signalised pedestrian crossing, a pedal cyclist was cycling ahead of him from his left to right. Hence, due to it was too sudden the Motor Lorry collided into the cyclist right portion. See photo 1 to 7 below.



**Photo 1** shows the mileage of the Motor Lorry at the time of our inspection was recorded as 33363km.



**Photo 2** shows a general view of the front portion of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained minor impact at its front right bumper. Only stain marks was observed on the front right bumper as a result of the accident.



Photo 3 shows a general view of the front left portion of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained minor impact at its front right bumper. Only stain marks were observed on the front right bumper as a result of the accident.



Photo 4 shows a minor stain mark on the front right side bumper as a result of the accident.





**Photo 5** shows a minor stain mark on the front right side bumper as a result of the accident



**Photo 6** shows a general view of the front right portion of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to have sustained minor impact at its front right bumper. Only stain marks was observed on the front right bumper as a result of the accident.



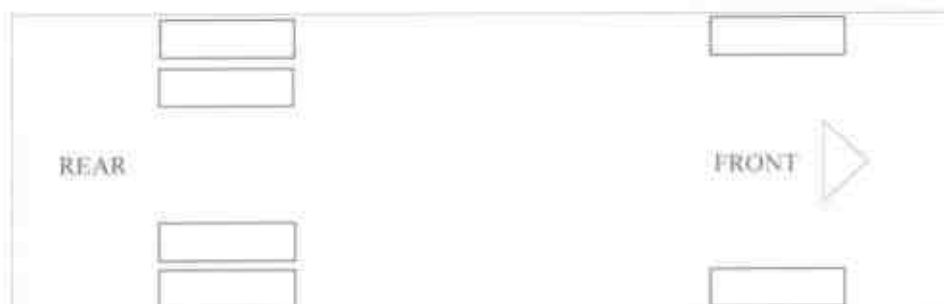
Photo 7 shows a general view of the Motor Lorry's rear body at the time of our inspection. There was no damage found to the rear portion of the Motor Lorry.

### Tyres and Wheel Rims

7. The 2 front tyres and 4 rear tyres of the Motor Lorry were observed to be in serviceable condition and sufficiently inflated for vehicular operation. We 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:-

Bridgestone R294 275/70 R22.5 (8mm)

Bridgestone R294 275/70 R22.5 (7mm)



Bridgestone R294 275/70 R22.5 (9mm)

Bridgestone R294 275/70 R22.5 (8mm)

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8. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damages. See photo 8 – 11 below.



**Photo 8** shows the condition of the front left tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 7mm. The tyre, which was wrapped around standard alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.



**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 8mm. The tyre, which was wrapped around standard alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.



**Photo 10** shows the condition of the rear left tyres of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 8mm. The tyres, which were wrapped around standard alloy wheel rim, were also observed to be sufficiently inflated for vehicular operation.



**Photo 11** shows the condition of the rear right tyres of the Motor Lorry, which were observed to be in serviceable condition with remaining tread depth of approximately 9mm.



## Engine Compartment & Operating Fluids

9. Upon examination of the Motor Lorry's engine compartment, we had observed that all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, engine oil, power steering fluid and engine coolant were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids.
10. Further examination of the engine compartment found that there was no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine compartment of the Motor Lorry.
11. Our subsequent checks on the underside of the Motor Lorry also revealed no sign of fluid stain. Visually, the various undercarriage components of the Motor Lorry were all observed to be intact and without any visible damage. See photo 12 – 15 below.

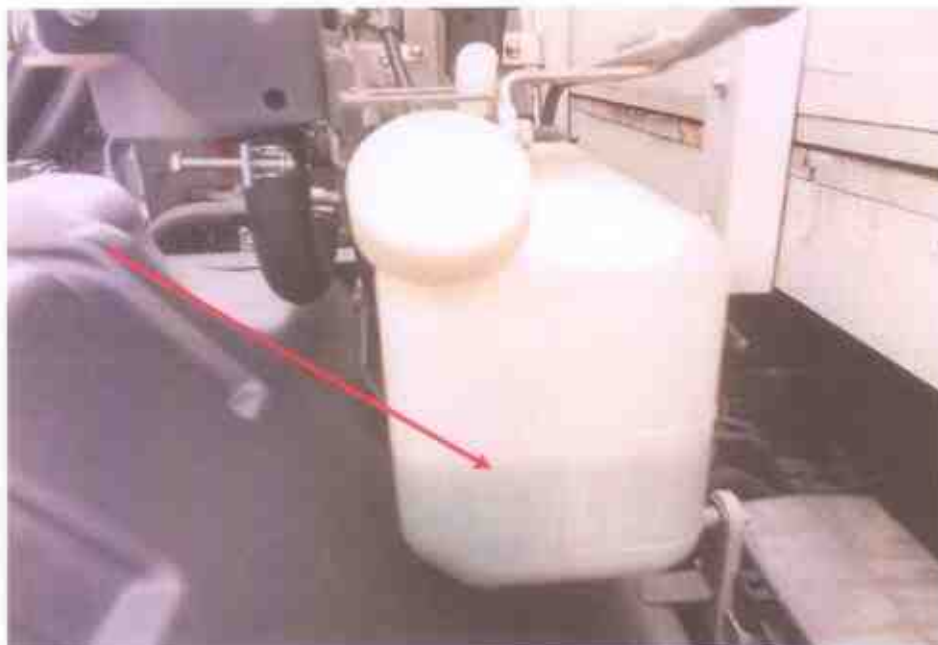


**Photo 12** shows a general view of the Motor Lorry's engine compartment, which was accessed by lifting the front cabin of the Motor Lorry. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine.





**Photo 13** shows the power steering fluid reservoir of the Motor Lorry at the time of our inspection. It was observed to be of sufficient level and without any visible contamination (arrowed).



**Photo 14** shows the engine coolant reservoir of the Motor Lorry at the time of our inspection. The engine coolant was observed to be of sufficient level and without any visible contamination (arrowed).



**Photo 15** shows the engine dip stick of the Motor Lorry at the time of our inspection. The engine oil was observed to be of sufficient level and without any visible contamination (circled).

### Steering System & Braking System

12. The mechanical components of the Motor Lorry steering system were all found to be visually intact and undamaged. The steering wheel, steering tie rods, drive shafts and ball joints of the Motor Lorry were observed to be intact and securely attached to the front left wheel and front right wheel.
13. Static test on the steering system of the Motor Lorry also revealed no abnormality to the steering system. We did not experience any abnormal free play and/or other resistance when turning the steering wheel left and right to full lock positions. Our visual examination of the various steering components which had included the rack and pinion, tie rods, tie rod ends and ball joints had revealed that these components were all generally in good condition. See photo 16 & 17 below.



**Photo 16** 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 17** shows the various undercarriage components at the front right 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.



14. The braking system of the Motor Lorry was noted to be of an air-assisted hydraulic braking system. Briefly, in this system, compressed air is used to force the hydraulic fluid to the brake wheel cylinders (for drum brakes) or to the brake callipers (for disc brakes). The pressurized hydraulic fluid then presses onto the brake shoes (for drum brakes) or onto the brake pads (for disc brakes), through the respective braking mechanism, thus slowing the rotation of the wheels.
15. A static brake test(s) was able to be carried at time of our inspection. This is to determine on whether there was any leakage of compressed air that could have affected the braking efficiency of the Motor Lorry. The air pipes, air tanks and connecting valves had all appeared to be in good general condition and securely fitted upon our static brake test. The static brake test was of a satisfactory result. Its brake pedal responded by releasing excessive compressed air upon stepping on the brake pedal suggesting that its braking system was in serviceable condition at the material time of accident. The brake fluids, was found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids.
16. Checks on the brake shoes (brake pads) at the rear wheels of the Motor Lorry revealed that the brake shoes (brake pads) were in serviceable condition with sufficient frictional material for operational purposes. In general, our visual inspection of the mechanical components of the Motor Lorry's braking system appear to suggest that its braking system was in serviceable condition at the material time of accident. See photo 18 to 20 below.



**Photo 18** shows the various undercarriage components at the rear wheels of the Motor Lorry. There was no sign(s) of brake fluid leakage along the brake hoses and brake pipes.



**Photo 19** shows the brake shoes (brake pads) at the rear wheels of the Motor Lorry revealed that the brake shoes (brake pads) were in serviceable condition with sufficient frictional material for operational purposes.



**Photo 20** shows the air pressure tank of the Motor Lorry. It was observed to be unaffected by the accident. No air leakage was found at time of our inspection.

### **Electronic Safety / Warning Indicators**

17. The Motor Lorry was not fitted with any electronic safety feature(s) like Anti-Brake Lock System (ABS), Supplemental Restraint System (SRS) etc. There was hence no test carried out on the functionality of these systems.

### **Operational Behaviour of the Motor Lorry**

18. A short operational test of the Motor Lorry, to primarily determine whether there was any abnormality to its various operating systems like its engine system, its transmission system, steering system and braking system was subsequently carried out. The test was conducted by driving the Motor Lorry forward, stopping, before reversing and coming to a stop again.
19. During the operational test, the various transmission gears of the Motor Lorry were able to be engaged without any difficulty by stepping on the clutch pedal and manually shifting the gear lever. There were no abnormal sound heard and/or abnormal behaviour of the Motor Lorry's engine system. It was able to move forward and backward normally. The braking system was also found to be in working condition as the Motor Lorry was able to slow down and come to a complete stop upon depressing of the brake pedal. See photo 21 below.





**Photo 21** shows the operational test on the Motor Lorry. It was observed to be in serviceable condition. Operational test such as moving forward, turn left & right and also braking test on the Motor Lorry was conducted successfully.

## Conclusion

20. From our physical inspection of the Motor Lorry, it appears that its engine system, steering system, braking system and transmission system were all in serviceable condition. We did not find any evidence(s) to suggest that there was possible mechanical failure to the Motor Lorry that may have caused and/or contributed to the accident. This is also taking into consideration that the operational test of the Motor Lorry, which we had conducted, did not produce any sign(s) or symptom(s) to suggest that there was any abnormality to its various operating systems.

21. The 2 front tyres and 4 rear tyres fitted on the Motor Lorry were also found to be in serviceable condition. We 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 7mm to 9mm each.



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