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Our Ref : CI/TPD18002601/N

22 January 2018

**Fatal Accident Investigation Team**

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

**MECHANICAL INSPECTION REPORT OF MOTOR LORRY YP 6093L**

1. We refer to your request on 9 January 2018 to conduct a physical inspection of a motor lorry bearing registration number YP 6093L (herein referred to as "**Motor Lorry**"), which was involved in a fatal road traffic accident on 2 December 2017.
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 21 January 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 17,837km.
5. The Motor Lorry had sustained relatively minor impact at its frontal portion, which had caused the front number plate to be slightly bent, the front bumper to be buckled on the left side and a cracked left headlight. The left side mirror of the Motor Lorry was also dislodged.

**Tyres and Wheel Rims**

6. 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:-



7. The 6 tyres were observed to be wrapped around standard alloy wheel rims that were found to be without any damage. See photos 1 – 10 below.



**Photo 1** shows a general view of the front left body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good general condition except for some relatively minor impact damage at its front body. The left side mirror was also dislodged. The mileage of the Motor Lorry at the time of our inspection was 17,837km.



Photo 2 shows a general view of the front right body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good general condition except for some relatively minor impact damage at its front body. The left side mirror was also dislodged.



Photo 3 shows a closer view of the bent front number plate of the Motor Lorry at the time of our inspection (circled).





Photo 4 shows a closer view of the dislodged left side mirror of the Motor Lorry at the time of our inspection (circled).



Photo 5 shows a closer view of the buckled front bumper and cracked left headlight of the Motor Lorry at the time of our inspection (circled).



**Photo 6** 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.



**Photo 7** 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 8mm. The tyre, which was wrapped around standard alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 6 tyres that were fitted on the Motor Lorry.



**Photo 8** 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 6mm. 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 rear left tyres of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 6mm. The tyres, which were wrapped around standard alloy wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 6 alloy wheel rims of the Motor Lorry.





**Photo 10** 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 6mm. There was also no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 6 tyres that were fitted on the Motor Lorry.

### **Engine Compartment & Operating Fluids**

8. Upon examination of the Motor Lorry's engine compartment, we had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, power steering fluid, engine oil and engine coolant were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids.
9. Further examination of the engine compartment revealed no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment of the Motor Lorry.
10. Our subsequent checks on the underside of the Motor Lorry also revealed no fluid stain. Visually, the various undercarriage components of the Motor Lorry were all observed to be intact and without any visible damage. See photos 11 – 16 below.



**Photo 11** 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 compartment (photograph shows the engine compartment as viewed from the left front side of the Motor Lorry).



**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 (photograph shows the engine compartment as viewed from the right front side of the Motor Lorry).





**Photo 13** shows the brake fluid reservoir of the Motor Lorry at the time of our inspection. The brake fluid was observed to be of sufficient level and without any visible contamination.



**Photo 14** shows the power steering fluid reservoir of the Motor Lorry at the time of our inspection. The power steering fluid was observed to be of sufficient level and without any visible contamination.



**Photo 15** shows the engine oil dipstick 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.



**Photo 16** shows checks being carried out to the engine coolant 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.

### **Steering System & Braking System**

11. The mechanical components of the Motor Truck's steering system were all found to be visually intact and undamaged. The steering wheel, steering column, steering rack and ball joints of the Motor Lorry were observed to be intact and securely attached to the front left wheel and front right wheel.
12. Although the steering system could not be tested at the time of our inspection (engine unable to be started), it is likely that the steering system of the Motor Lorry was in serviceable condition at the material time of accident since its mechanical components were all found to be generally intact and securely fitted.
13. 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. The braking system of the Motor Lorry was likely to be in serviceable condition at the material time. This was also taking into consideration that the brake fluid was of sufficient level, and also that there was no sign(s) of brake fluid leakage along the brake hoses and brake pipes. See photos 17 - 20 below.





**Photo 17** shows the brake pipe (arrowed) at the rear left wheel of the Motor Lorry. We did not observe any leakage of brake fluid at the time of our inspection of the Motor Lorry. Our static tests of the Motor Lorry's braking system, along with our 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 18** shows the undercarriage components at the front right wheel of the Motor Lorry, in particular the brake hose (arrowed). The Motor Lorry's braking system was likely to be in serviceable condition at the material time of accident.



**Photo 19** 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 mechanical 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 20** shows the various undercarriage components at the front left wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various steering mechanical 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.

### Electronic Safety / Warning Indicators

14. The Motor Lorry was fitted with electronic safety feature(s) like Anti-Brake Lock System (ABS) etc. However no test could be carried out on the functionality of these systems at the time of our inspection (engine unable to be started). See photo 21 below.



**Photo 21** shows the warning lights for the various electronic operating systems of the Motor Lorry appearing on its instrument panel when the ignition was turned on, in particular the ABS light (arrowed). However no test could be carried out on the functionality of these systems at the time of our inspection (engine unable to be started).

### Operational Behaviour of the Motor Lorry

15. For similar reason, we were also not able to carry out any operational test to primarily determine whether there was any operational abnormality to the engine system, transmission system, steering system and braking system of the Motor Lorry.



## Conclusion

16. At the time of our inspection of the Motor Lorry, its steering system and braking system could not be tested as the Motor Lorry's engine could not be started. However basing purely on our observations, it would appear that the steering system and braking system of the Motor Lorry were in serviceable condition. This is taking into consideration that all the various mechanical components were found to be intact and undamaged.
17. The observations gathered from our physical inspection of the Motor Lorry had indicated no evidence to suggest possible mechanical failure to the Motor Lorry that may have contributed to the accident.
18. 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 6mm to 8mm each.



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