

Your Ref: TP/IP/24186/2022
Our Ref : CI/TPD22013009/P

10th February 2023

General Investigation Team

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

MECHANICAL INSPECTION REPORT OF MOTOR LORRY YN 1461B

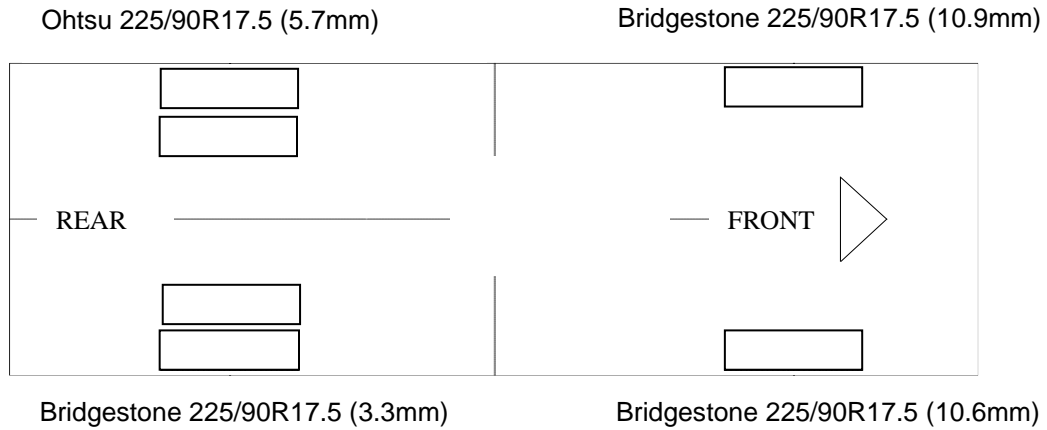
1. I refer to your request on 13th December 2022 to conduct a physical inspection of a Motor Lorry bearing registration number YN 1461B (herein referred to as "**Motor Lorry**"), which was involved in a road traffic accident on 8th September 2022.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Lorry that may have contributed to the accident.
3. Following the request, I had carried out a physical inspection of the Motor Lorry on 25th January 2023 at the premises of Traffic Police vehicle pound, 517 Airport Road Singapore 539942. I now set out below my observations and comments with respect to this inspection.

General Condition

4. The mileage of the Motor Lorry at the time of my inspection was 295,637km.
5. The Motor Lorry was observed to sustained damage at its front portion. Its front bumper were damage at the time of my inspection as a result of 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:-



7. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 11 below.



Photo 1 shows a general view of the instrument cluster of the Motor Lorry at the time of my inspection. The mileage of the Motor Lorry was 295,637km.



Photo 2 shows a general view of the front body of the Motor Lorry at the time of my inspection. It appeared to have sustained damage at its front portion. Its front bumper was damage at the time of my inspection as a result of the accident.



Photo 3 shows a close up view of the Motor Lorry's front portion at the time of my inspection. Its front bumper (circled) was damage at the time of my inspection as a result of the accident.



Photo 4 shows a close up view of the Motor Lorry's front portion at the time of my inspection. Its front bumper (circled) was damage at the time of my inspection as a result of the accident.



Photo 5 shows a general view of the Motor Lorry's right portion at the time of my inspection. The Motor Lorry was observed to be intact and unaffected by the accident.

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Photo 6 shows a general view of the right body of the Motor Lorry at the time of my inspection. The Motor Lorry was observed to be intact and unaffected by the accident.



Photo 7 shows a general view of the left body of the Motor Lorry at the time of my inspection. The Motor Lorry was observed to be intact and unaffected by the accident.



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 10.6mm. The tyre, which was wrapped around standard steel 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 9 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 3.3mm. The tyre, which was wrapped around standard steel wheel rim, it was 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 5.7mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation.



Photo 11 shows the condition of the front left tyre of the Motor Lorry, which were observed to be in serviceable condition with remaining, tread depth of approximately 10.9mm. 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, I had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. I have observed that the engine oil, the air in the air-brake cylinder, 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.
9. Further examination of the engine compartment revealed, there was no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine compartment of the Motor Lorry.
10. My 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 photo 12 – 17 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 compartment.



Photo 13 shows the air in the air brake cylinders of the Motor Lorry at the time of my inspection. The air in the cylinder was observed to be of sufficient level & serviceable at the time of the accident.



Photo 14 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 (arrowed) and without any visible contamination.



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



Photo 16 shows the power steering fluid reservoir of the Motor Lorry at the time of my inspection. The power steering fluid was observed to be of sufficient level 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

11. 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 air brake was of sufficient level, and also that there was no sign(s) of air leakage along the brake hoses, brake pipes and air cylinders.
12. Static test on the steering system of the Motor Lorry also revealed abnormality to the steering system. I experience abnormal resistance when turning the steering wheel to the left full lock position. However, my visual examination of the various steering components which had included the steering box, tie rods, tie rod ends and ball joints had revealed that these components were all generally in good condition. See photo 18 - 26 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 various undercarriage components at the front right wheel of the Motor Lorry, in particular the steering box (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.

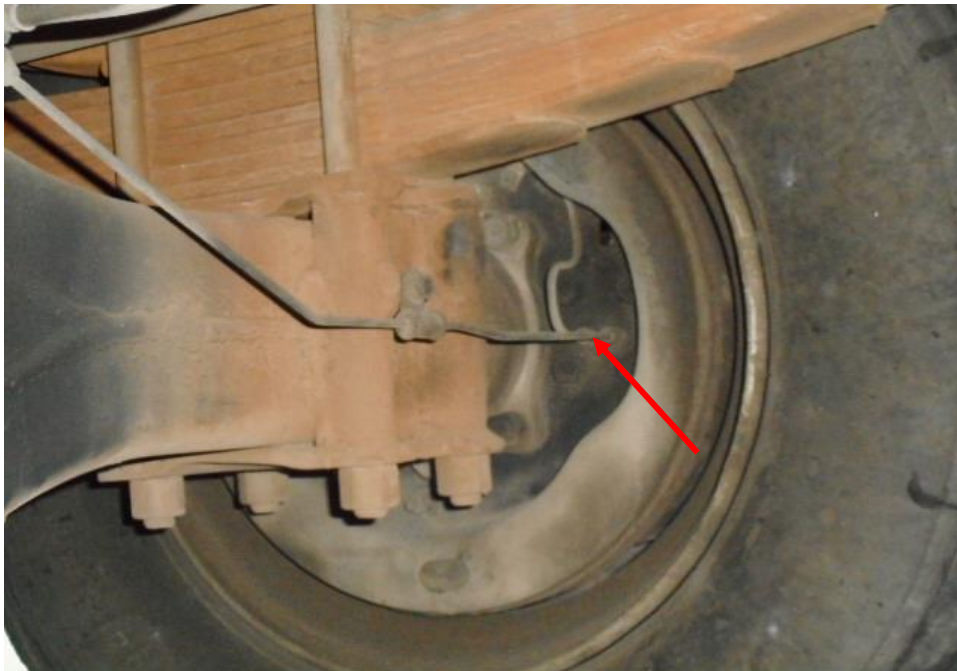


Photo 21 shows the brake pipe (arrowed) at the rear right wheel of the Motor Lorry. I did not observe any leakage of air brake at the time of my inspection of the Motor Lorry. My static tests of the Motor Lorry's braking system, along with my visual examination of the various mechanical components in 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 pipe (arrowed) at the rear left wheel of the Motor Lorry. I did not observe any leakage of air brake 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 23 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Lorry. No leakage of air brake was observed. Visual examination of the various components of the braking system like the brake drum, 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.

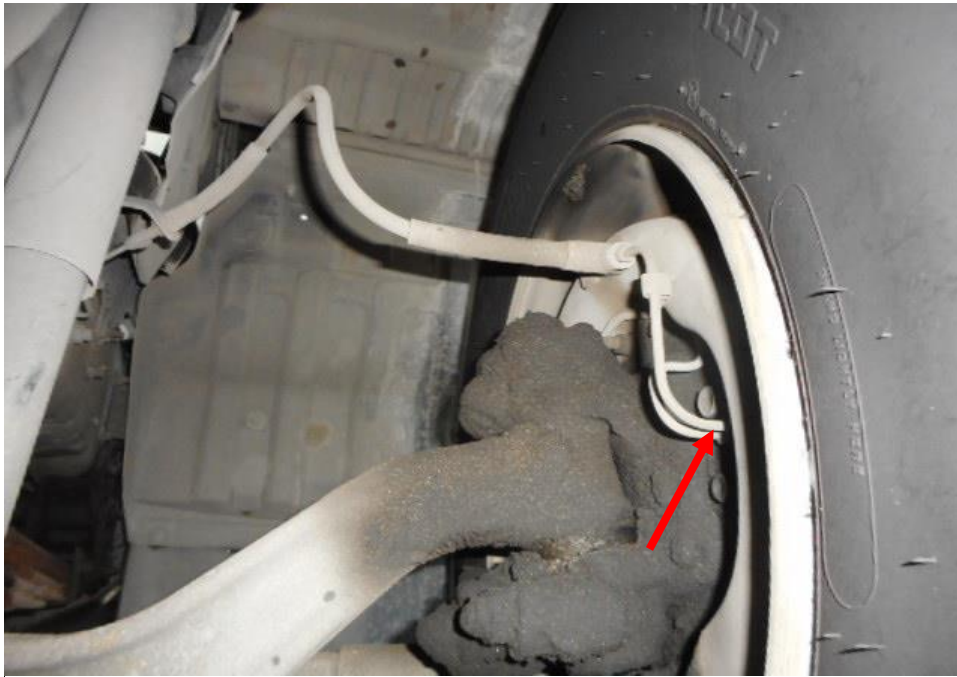


Photo 24 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Lorry. No leakage of air brake was observed. Visual examination of the various components of the braking system like the brake drum, brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.



Photo 25 shows the front right wheel of the Motor Lorry turned to its full right (arrowed). During my steering system test, I did not experience any abnormal free play and/or resistance when I had turned the steering wheel towards full right.



Photo 26 shows the front right wheel of the Motor Lorry turning to its left (arrowed) however, during my steering system test, I experience resistance when I turned the steering wheel towards the left and the steering would be jammed in the midst of turning towards the left.

Electronic Safety / Warning Indicators

13. The Motor Lorry's automatic self-test of the functionality of its electronic operating systems was not tested as the Motor Lorry did not come fitted with these systems.

Seat Belts

14. The front right and front 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

15. A short operational test of the Motor Lorry, by driving 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 unable to be carried out as the steering was jammed while turning towards the left.

Conclusion

16. For this particular case, I was able to determine that there was a mechanical failure to the steering system of the Motor Lorry that may have contributed to the accident. Although our visual check to the steering components but during our static test to the steering system the steering was able to turn fully to the right, however when the steering was turning to the left it had jammed in the midst. We are in view that the mechanical failure to the steering system had likely caused the accident to the Motor Lorry.

17. We were able to conduct static test to the braking system and there were no abnormalities to it and also the engine was also able to be started and there were also no abnormalities observed to it.

18. The 6 tyres fitted on the Motor Lorry were also 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 3.3mm – 10.9mm.



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