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Your Ref: TP/IP/23985/2021 22nd September 2021
Our Ref : CI/TPD21007275/P

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

MECHANICAL INSPECTION REPORT OF MOTOR TRUCK XD 2517H

1. I refer to your request on 30 June 2021 to conduct a physical inspection of a Motor Truck bearing registration number XD 2517H (herein referred to as "**Motor Truck**"), which was involved in a fatal road traffic accident on 15th May 2021.

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

3. Following the request, I had carried out a physical inspection of the Motor Truck on 20th September 2021 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 Truck at the time of my inspection was 717,698km.

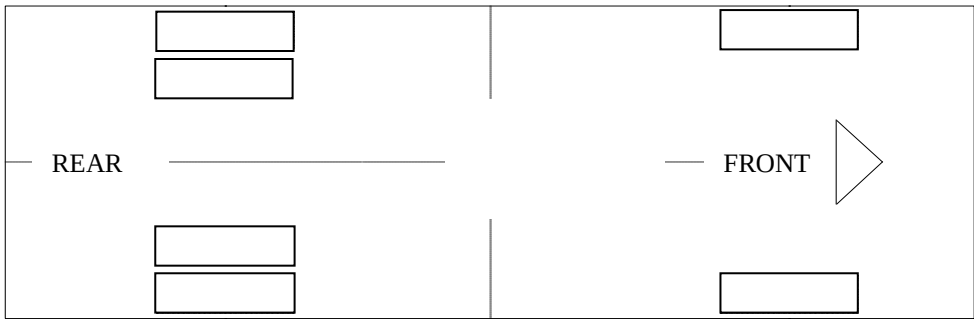
5. The Motor Truck was observed to sustain damaged on its Trailer's right portion. Its right body panel was damaged at the time of my inspection.

Tyres and Wheel Rims

6. The 2 front tyres and 4 rear tyres of the Motor Truck and 8 tyres of the trailer 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 of the Motor Truck and the 8 tyres of the trailer. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Motor Truck and 8 tyres of the trailer were recorded as follows:-

Motor Truck

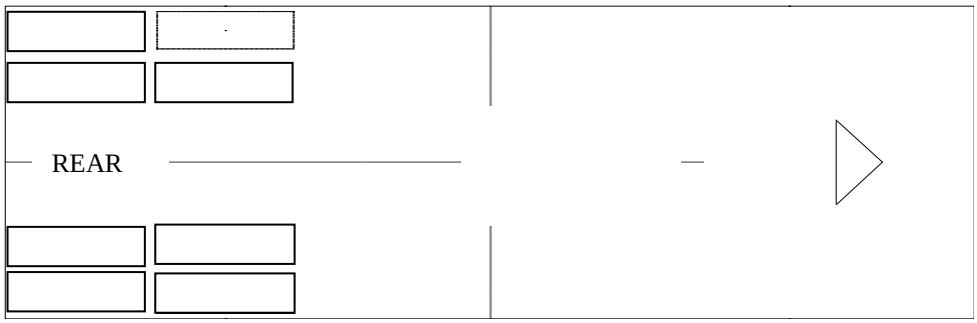
Firenza 295/80R22.5 (13.7mm) Firenza 295/80R22.5 (9.4mm)



Firenza 295/80R22.5 (12.5mm) Firenza 295/80R22.5 (9.2mm)

Trailer

Headway 10.00R22.5 (7.1mm)



Headway 10.00R22.5 (4.2mm)

7. The 6 tyres of the Motor Truck and 8 tyres of the Trailer were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 17 below.

Photo 1 shows a general view of the instrument cluster of the Motor Truck at the time of my inspection. The mileage of the Motor Truck was 717,698km

Photo 2 shows a general view of the front body of the Motor Truck at the time of my inspection. The Motor Truck was observed to be intact and unaffected by the accident.

Photo 3 shows a general view of the front right body of the Motor Truck at the time of my inspection. The Motor Truck was observed to be intact and unaffected by the accident.

Photo 4 shows a general view of the front left body of the Motor Truck at the time of my inspection. The Motor Truck was observed to be intact and unaffected by the accident.

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

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

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

Photo 8 shows a general view of the trailer's right body at the time of my inspection. The Motor Truck was observed to sustain damaged on its Trailer's right portion. Its right body panel was damaged at the time of my inspection.

Photo 9 shows a close up view of the trailer's right body at the time of my inspection. The Motor Truck was observed to sustain damaged on its Trailer's right portion. Its right body panel (arrowed) was damaged at the time of my inspection.

Photo 10 shows a close up view of the trailer's right body at the time of my inspection. The Motor Truck was observed to sustain damaged on its Trailer's right portion. Its right body panel (arrowed) was damaged at the time of my inspection.

Photo 11 shows a general view of the trailer's rear body at the time of my inspection. The Motor Truck was observed to be intact.

Photo 12 shows the condition of the front right tyre of the Motor Truck, which was observed to be in serviceable condition with remaining tread depth of approximately 9.2mm. 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 Truck.

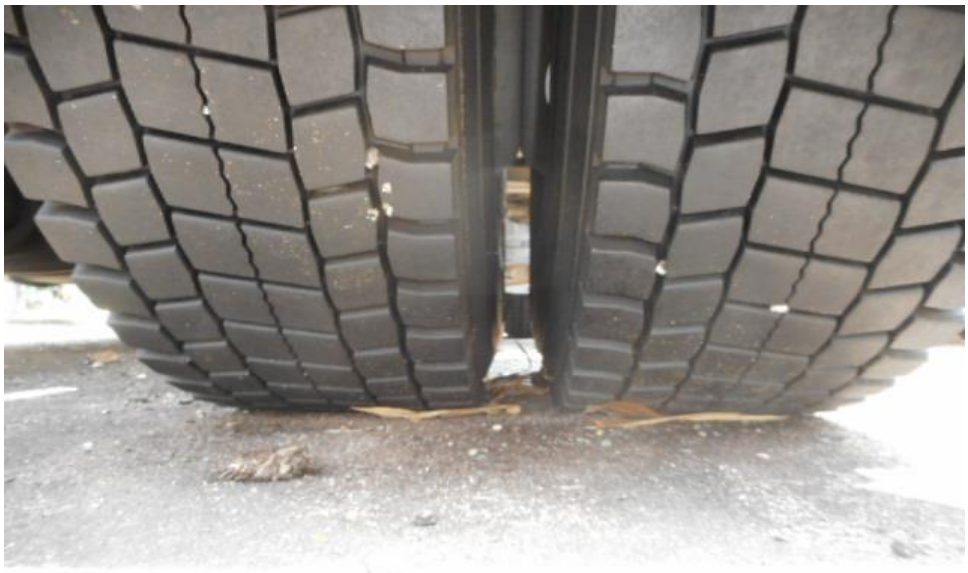


Photo 13 shows the condition of the rear right tyre of the Motor Truck, which was observed to be in serviceable condition with remaining tread depth of approximately 12.5mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 14 shows the condition of the rear left tyres of the Motor Truck, which was observed to be in serviceable condition with remaining tread depth of approximately 13.7mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 6 steel wheel rims of the Motor Truck.

Photo 15 shows the condition of the front left tyres of the Motor Truck, which were observed to be in serviceable condition with remaining tread depth of approximately 9.4mm. 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 Truck.

Photo 16 shows the condition of the right tyres of the trailer, which was observed to be in serviceable condition with remaining, tread depth of approximately 7.1mm. 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 8 tyres that were fitted on the trailer.

Photo 17 shows the condition of the left tyres of the trailer, which was observed to be in serviceable condition with remaining tread depth of approximately 4.2mm. 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 8 tyres that were fitted on the trailer.

Engine Compartment & Operating Fluids

8. Upon examination of the Motor Truck'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 brake fluid, 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 Truck.

10. My subsequent checks on the underside of the Motor Truck also revealed no fluid stain. Visually, the various undercarriage components of the Motor Truck were all observed to be intact and without any visible damage. See photo 18 – 23 below.

Photo 18 shows a general view of the Motor Truck's engine compartment, which was accessed by lifting the front cabin of the Motor Truck. 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 19 shows the air in the air brake cylinders of the Motor Truck 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 20 shows the engine coolant reservoir of the Motor Truck at the time of my inspection. The engine coolant was observed to be of sufficient level (arrowed) and without any visible contamination.

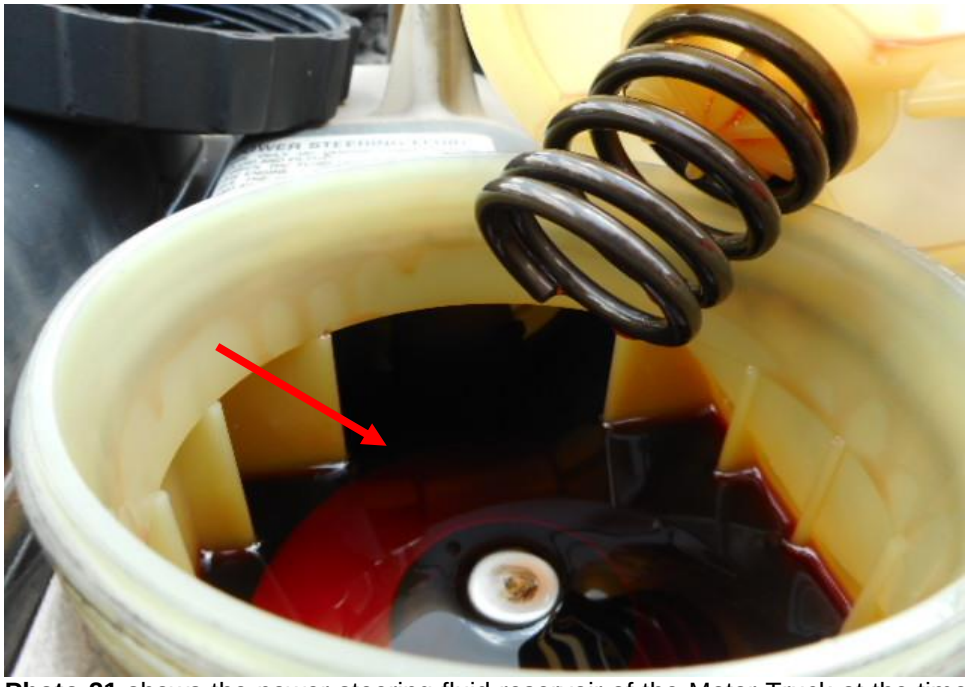


Photo 21 shows the power steering fluid reservoir of the Motor Truck at the time of my inspection. The power steering fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 22 shows the engine oil dip stick of the Motor Truck at the time of my inspection. The engine oil was observed to be of insufficient level at the time of our inspection.

Photo 23 shows the undercarriage of the Motor Truck, at the area where the engine housing located. I did not find any sign(s) or indication(s) of fluid leak, however old fluid stain(s) was observed on the underside of the Motor Truck.

Steering System & Braking System

11. Static brake tests conducted on the Motor Truck revealed no abnormality. The air 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 Truck. The braking system of the Motor Truck 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 Truck also revealed no abnormality to the steering system. I did not experience any abnormal free play and/or other resistance when turning the steering wheel left and right to full lock positions. My 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 24 - 32 below.

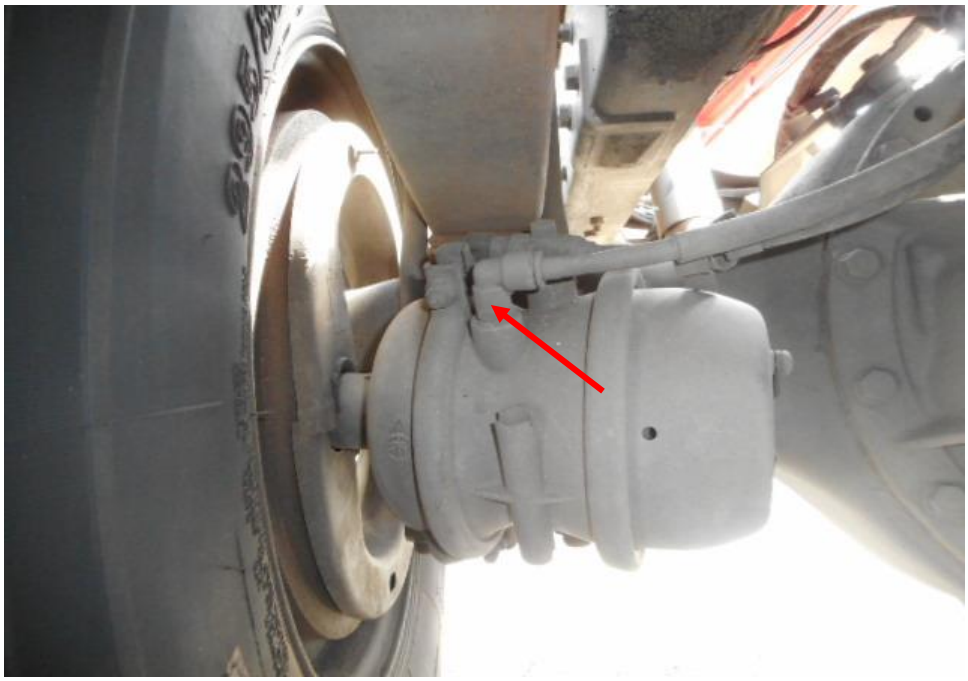


Photo 24 shows the brake pipe (arrowed) at the rear right wheel of the Motor Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Truck. My static tests of the Motor Truck's braking system, along with my visual examination of the various mechanical components in the braking system, had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Motor Truck was likely to be in serviceable condition at the material time of accident.

Photo 25 shows the brake pipe (arrowed) at the rear left wheel of the Motor Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Truck. My static tests of the Motor Truck'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 Truck was likely to be in serviceable condition at the material time of accident.

Photo 26 shows the brake pipe (arrowed) at the front right wheel of the Motor Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Truck. My static tests of the Motor Truck'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 Truck was likely to be in serviceable condition at the material time of accident.

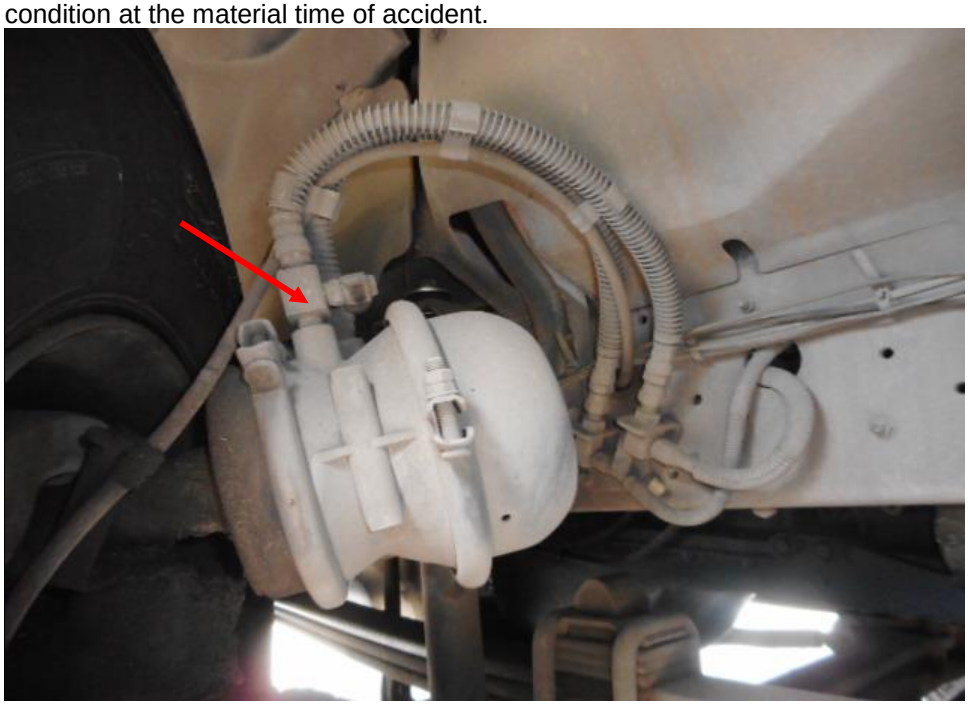


Photo 27 shows the brake pipe (arrowed) at the front left wheel of the Motor Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Truck. My static tests of the Motor Truck's braking system, along with my visual examination of the various mechanical components in the braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Motor Truck was likely to be in serviceable condition at the material time of accident.

Photo 28 shows the air brake cylinders (arrowed) at the undercarriage of the Motor Truck. I did not observe any leakage of air brake fluid at the time of my inspection of the Motor Truck. My static tests of the Motor Truck'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 Truck was likely to be in serviceable condition at the material time of accident.

Photo 29 shows the various undercarriage components at the front right wheel of the Motor Truck, 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 Truck 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.

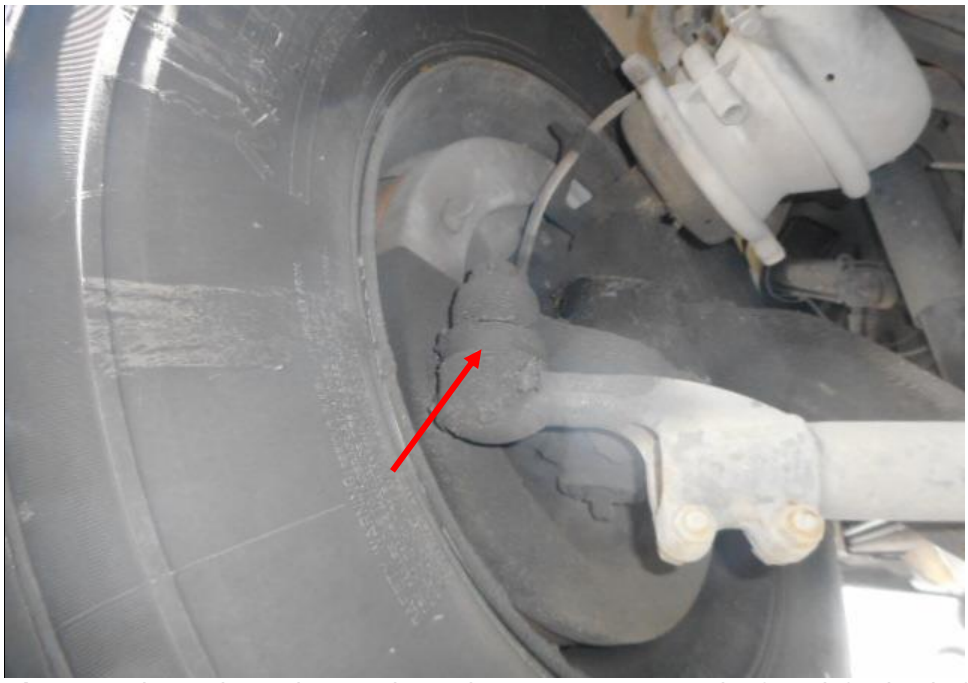


Photo 30 shows the various undercarriage components at the front left wheel of the Motor Truck, in particular the steering tie rod end (arrowed). The various undercarriage components of the Motor Truck were all found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

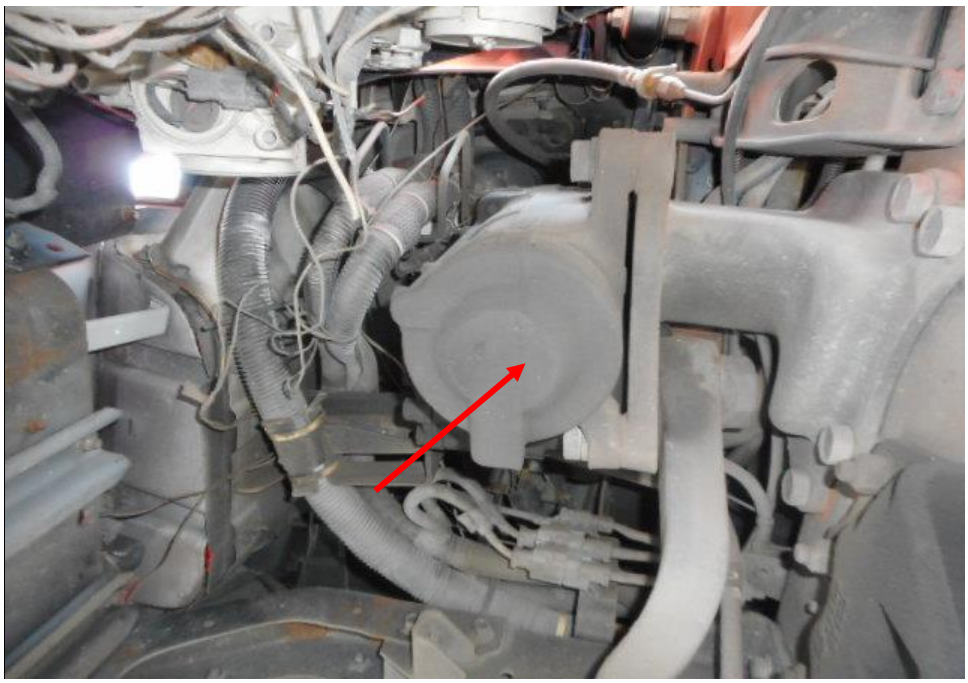


Photo 31 shows the steering box component (arrowed) at the undercarriage of the Motor Truck was found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 32 shows the front left wheel of the Motor Truck turned to its full right. 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 left and full right. This would suggest that the steering system of the Motor Truck was likely to be in serviceable condition at the material time of accident.

Electronic Safety / Warning Indicators

13. The Motor Truck's automatic self-test of the functionality of its electronic operating systems was not conducted as it was not fitted with these systems.

Seat Belts

14. The Front right and front left seat belts of the "Motor Truck" 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 Truck

15. A short operational test to the Motor Truck, 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 Truck forward, stopping, before reversing and coming to a stop again.

16. During the operational test, the various transmission gears of the Motor Truck were able to be engage without any difficulty by stepping on the clutch pedal and manually shifting the gear lever. There were no abnormal sounds heard and/or abnormal behaviour of the Motor Truck'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 Truck was able to slow down and come to a complete stop upon depressing of the brake pedal. See photo 2 & 32.

Conclusion

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

18. The 2 front tyres, 4 rear tyres fitted on the Motor Truck and the 8 tyres of the trailer 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 Motor Truck 6 tyres and the 8 tyres of the trailer. The 6 tyres of the Motor Truck and the 8 tyres of the trailer were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 9.2mm – 13.7mm. & 4.2mm – 7.1 mm.

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