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7th October 2020

General Investigation Team

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

MECHANICAL INSPECTION REPORT OF PRIME MOVER XE 2046U

1. I refer to your request on 19th August 2020 to conduct a physical inspection of an Prime Mover bearing registration number XE 2046U (herein referred to as "**Prime Mover**"), which was involved in a road traffic accident on 16th July 2020.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Prime Mover that may have contributed to the accident.
3. Following the request, I had carried out a visual inspection of the Prime Mover on 1st October 2020 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

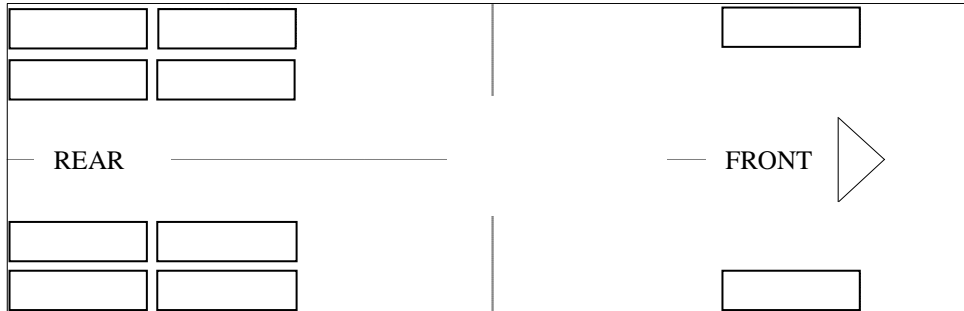
4. The mileage of the Prime Mover at the time of my inspection was not recorded. Due to the damage the engine components had sustained the Prime Mover's engine could be started up.
5. The Prime Mover was observed to have sustained damage at its front portion. Its front windscreen, front body panel and engine components were amongst the body parts that were damaged as a result of the accident.

Tyres and Wheel Rims

6. The 10 tyres of the Prime Mover 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 10 tyres of the Prime Mover. The tyre brand, tyre size and remaining tread depth of the 10 tyres of the Prime Mover were recorded as follows:-

Taitong 295/80 R22.5 (5.4mm)

Taitong 295/80 R22.5 (6.4mm)



Taitong 295/80 R22.5 (4.3mm)

Taitong 295/80 R22.5 (7.2mm)

7. The 10 tyres of the Prime Mover were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 10 below.



Photo 1 shows a general view of the Prime Mover's rear body at the time of my inspection. There was no damage found to the rear portion of the Prime Mover.



Photo 2 shows a general view of the front body of the Prime Mover at the time of my inspection. The Prime Mover was observed to have sustained damage at its frontal portion. Its front windscreen, front body panel and engine components were amongst the body parts that were damaged as a result of the accident.



Photo 3 shows the close up view of the Prime Mover front body at the time of my inspection. The Prime Mover was observed to have sustained damage at its front windscreen (circled), as a result of the accident.

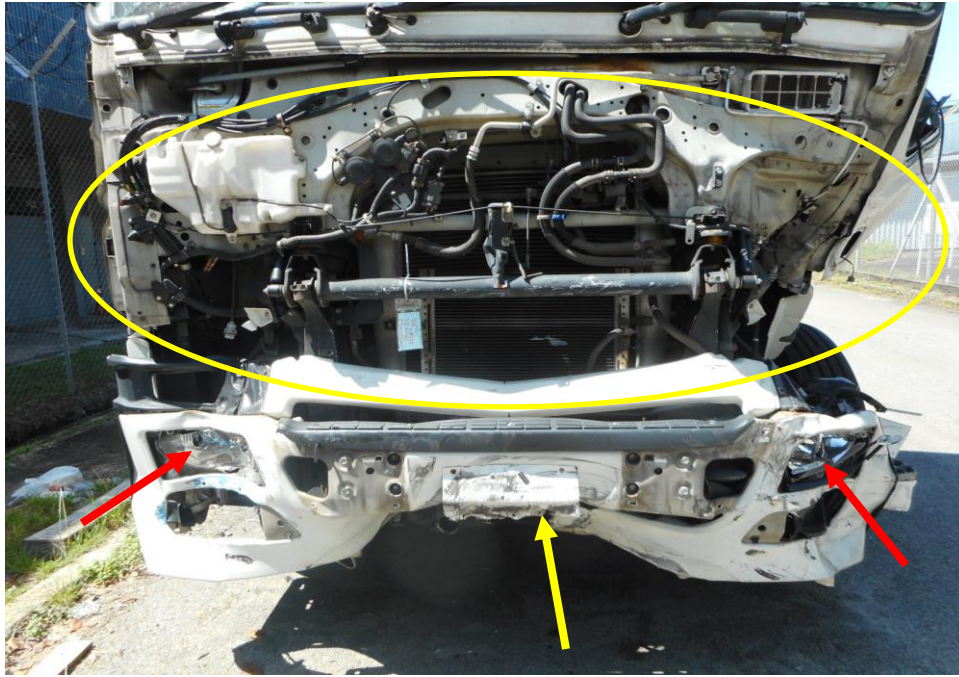


Photo 4 shows the close up view of the Prime Mover front body at the time of my inspection. The Prime Mover was observed to have sustained damage at its front body panel (circled), it's both front headlamps (red arrow) and front bumper (yellow arrow) was also damaged as a result of the accident.



Photo 5 shows a general view of the front right body of the Prime Mover at the time of my inspection, it was observed to have been unaffected by the accident.



Photo 6 shows a general view of the front right body of the Prime Mover at the time of my inspection, the right door (circled) was observed to have been damaged by the accident.

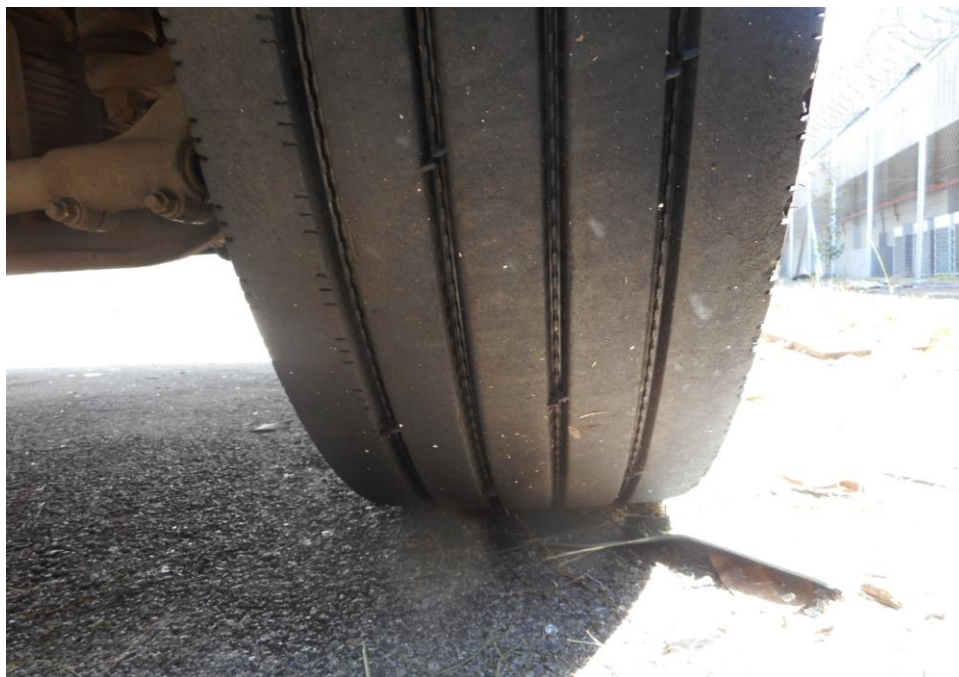


Photo 7 shows the condition of the front right tyre of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 7.2 mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 10 tyres that were fitted on the Prime Mover.

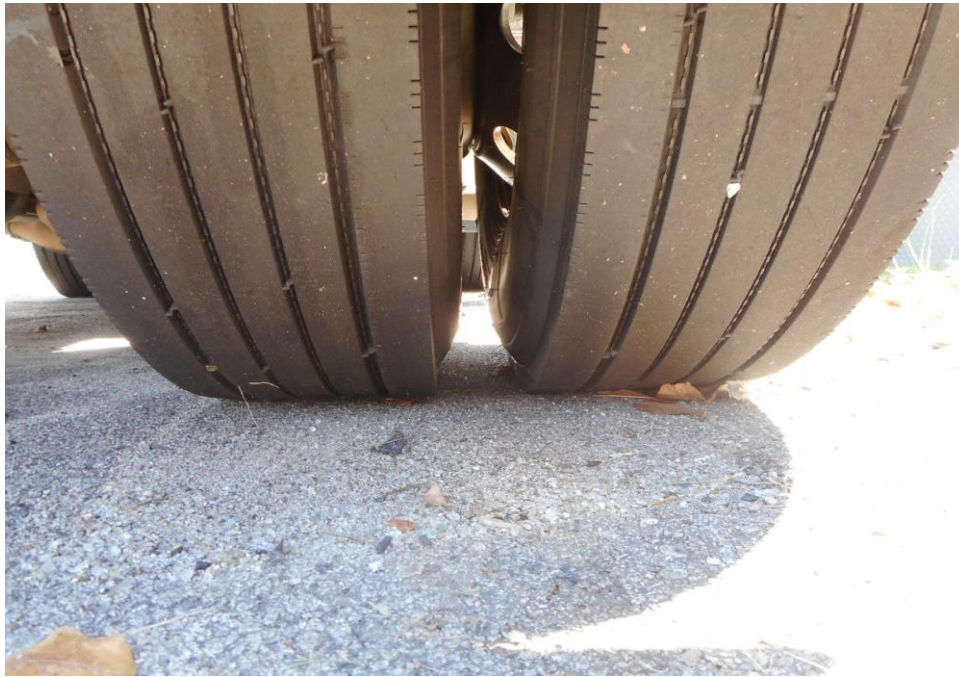


Photo 8 shows the condition of the rear right tyre of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 4.3mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

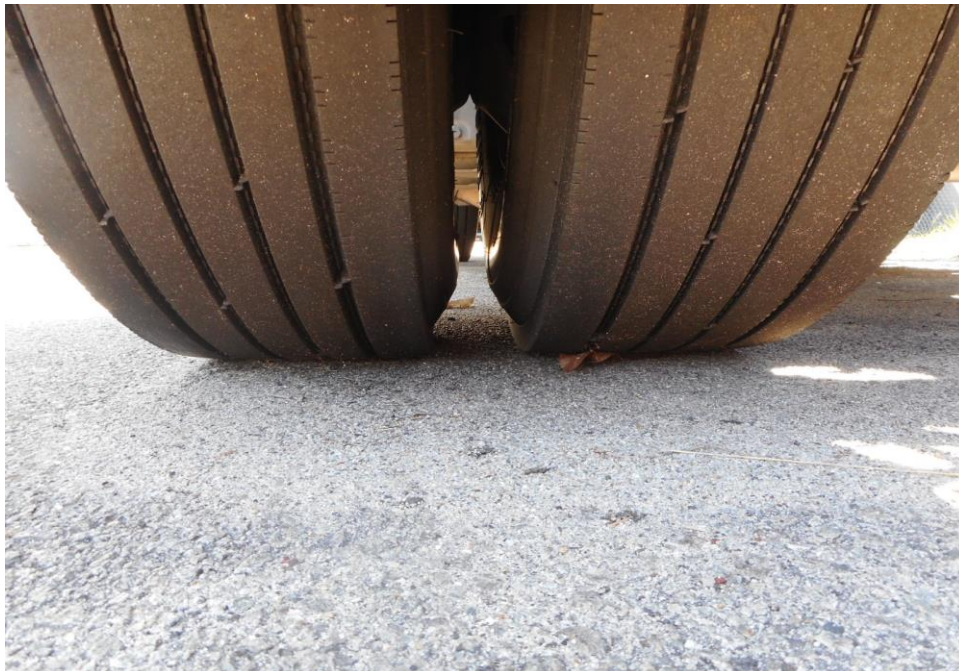


Photo 9 shows the condition of the rear left tyres of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 5.4mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 10 steel wheel rims of the Prime Mover.



Photo 10 shows the condition of the front left tyres of the Prime Mover, which were observed to be in serviceable condition with remaining tread depth of approximately 6.4mm. 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 10 tyres that were fitted on the Prime Mover.

Engine Compartment & Operating Fluids

8. The engine compartment of the Prime Mover was located below the front cabin of the Prime Mover. I was not able to carry out any checks on the engine compartment as the cabin of the Prime Mover was not able to be lifted to the engine compartment as it requires the battery powered. The various operating fluids were also not able to be checked.
9. However, further examination of the engine compartment revealed, that the components in the engine compartment of the Prime Mover had sustained damaged as a result of the accident. See photo 11 below.

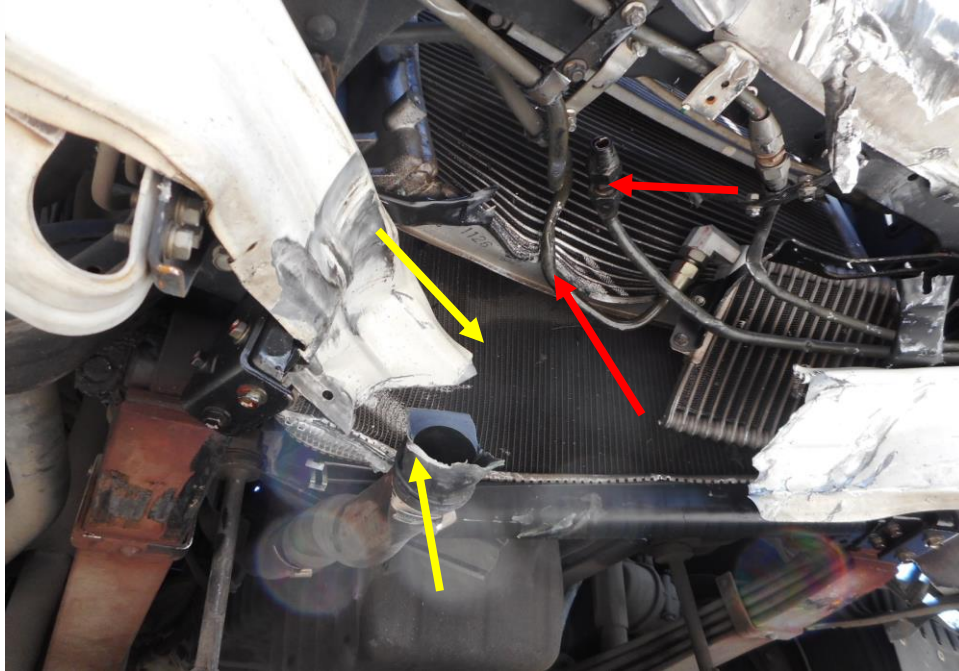


Photo 11 shows the close up view of the Prime Mover front underside at the time of my inspection. The Prime Mover was observed to have sustained damage at its engine, its oil hoses (red arrow) and radiator (yellow arrow) was also damaged as a result of the accident.

Steering System & Braking System

10. The mechanical components of the Prime Mover steering system were all found to be visually intact and undamaged. The steering shaft and steering rack of the Prime Mover were observed to be intact and securely attached to the front left wheel and front right wheel. The steering ball joints were also observed to be in a serviceable condition.
11. Although the steering system could not be tested at the time of my inspection (engine unable to be started), it is likely that the steering system of the Prime Mover was in serviceable condition since its mechanical components were all found to be generally intact and securely fitted..
12 - 14 below.



Photo 12 shows the various undercarriage components at the front right wheel of the Prime Mover, 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 Prime Mover 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 13 shows the various undercarriage components at the front left wheel of the Prime Mover, in particular the steering tie rod end (arrowed). The various undercarriage components of the Prime Mover 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.

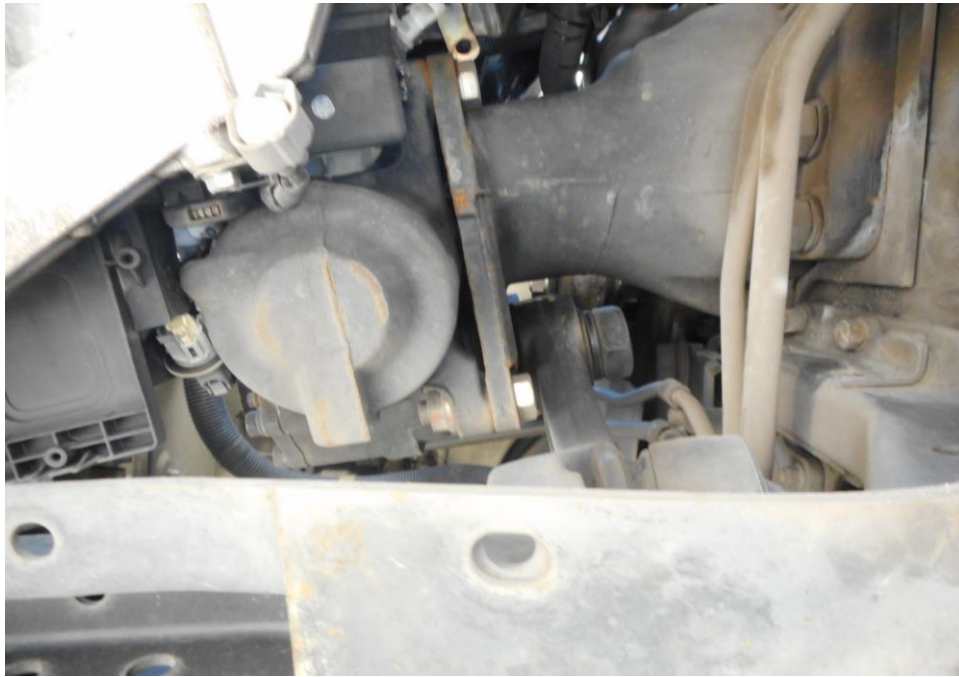


Photo 14 shows the steering box component (arrowed) at the undercarriage of the Prime Mover was found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

12. The braking system of the Prime Mover was noted to be of a full air-assisted braking system. Briefly, in this system, compressed air is used to press 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.
13. Since the engine of the Prime Mover could not be started, I was hence not able to carry out test(s) on whether there was any leakage of compressed air that could have affected the braking efficiency of the Prime Mover. However the air pipes, air tanks and connecting valves had all appear to be in good general condition and securely fitted upon my visual examination of these parts.
14. In general, my visual inspection of the mechanical components of the Prime Mover's braking system appear to suggest that its braking system was in serviceable condition at the material time of accident. See photo 15 -19 below.



Photo 15 shows the brake pipe (arrowed) at the rear right wheel of the Prime Mover. I did not observe any leakage of brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover'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 Prime Mover was likely to be in serviceable condition at the material time of accident.



Photo 16 shows the brake pipe (arrowed) at the rear left wheel of the Prime Mover. I did not observe any leakage of brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover'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 Prime Mover was likely to be in serviceable condition at the material time of accident.



Photo 17 shows the brake pipe (arrowed) at the front left wheel of the Prime Mover. I did not observe any leakage of brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover'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 Prime Mover was likely to be in serviceable condition at the material time of accident.

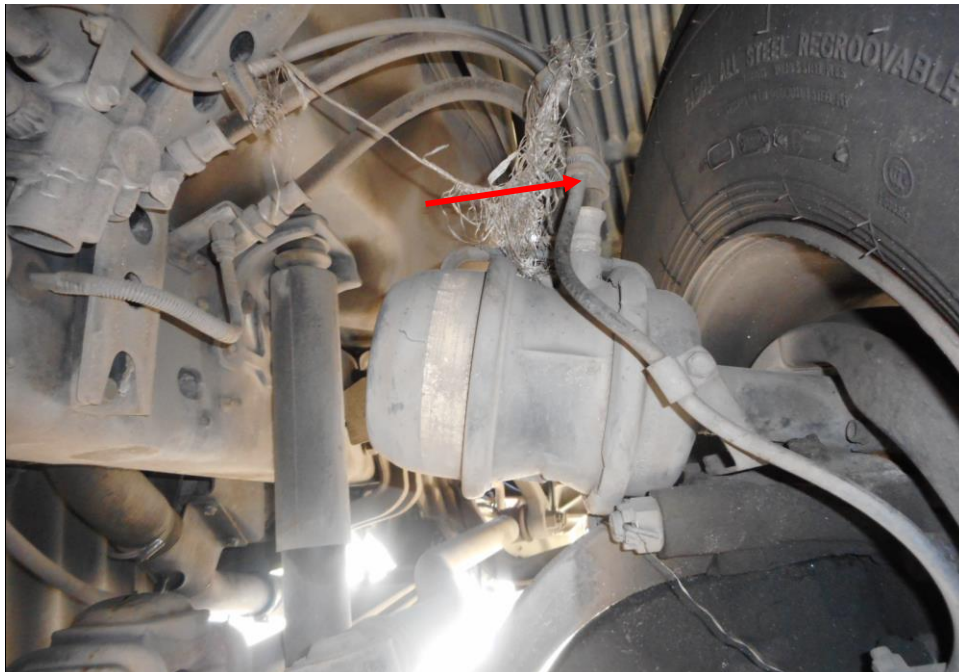


Photo 18 shows the brake pipe (arrowed) at the front right wheel of the Prime Mover. I did not observe any leakage of brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover's braking system, along with my visual examination of the various mechanical components in the braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Prime Mover was likely to be in serviceable condition at the material time of accident.

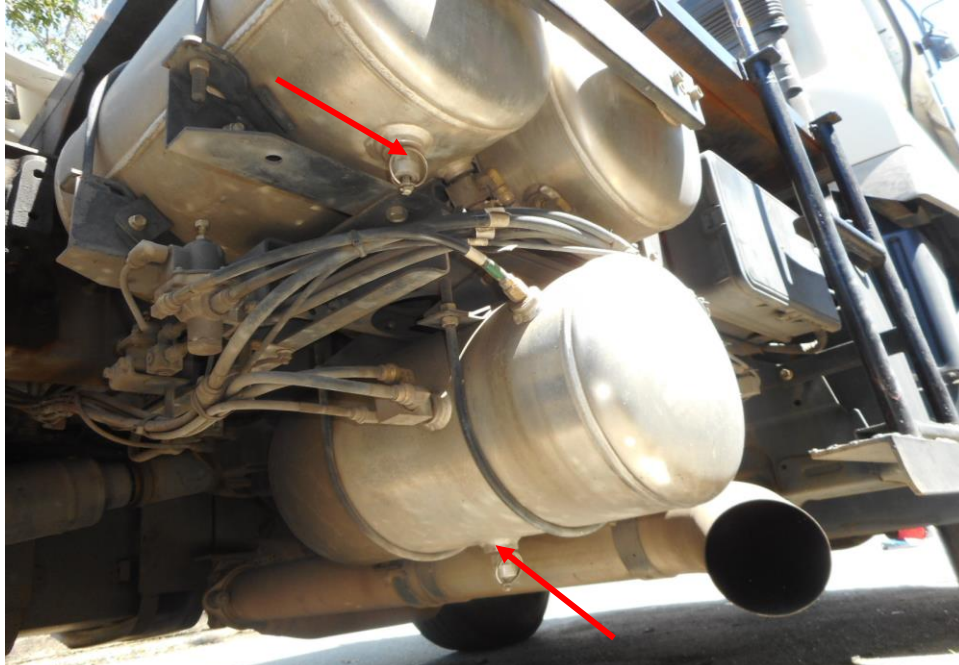


Photo 19 shows the air brake cylinders (arrowed) at the undercarriage of the Prime Mover. I did not observe any leakage of air brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover's braking system, along with my visual examination of the various mechanical components in the braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Prime Mover was likely to be in serviceable condition at the material time of accident.

Electronic Safety / Warning Indicators

15. The Electronic safety feature(s) like Anti-Brake Lock System (ABS), Supplemental Restraint System (SRS) and speed limiting device was similarly unable to be tested due to the Prime Mover's damage that the engine components had sustained.

Operational Behaviour of the Prime Mover

16. As the engine of the Prime Mover could not be started, I was hence not able to carry out any operational test(s) to primarily determine whether there was any operational abnormality to its engine system, transmission system, steering system and braking system.

Conclusion

17. At the time of my inspection of the Prime Mover, its steering system and braking system could not be tested as the Prime Mover's engine could not be started. However basing on my observations, it would appear that the steering system and braking system of the Prime Mover were in serviceable condition. This takes into consideration that the various mechanical components of the steering system and braking system were found to be intact and undamaged.
18. The observation gathered from my physical inspection of the Prime Mover had indicated no evidence to suggest possible mechanical failure to the Prime Mover that may have contributed to the accident.
19. The 10 tyres fitted on the Prime Mover 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 Prime Mover 10 tyres. The 10 tyres of the Prime Mover were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 4.3mm – 7.2mm.
20. My findings were based solely on a static and visual inspection of the Prime Mover. No operational test(s) could be carried out to the Prime mover as its engine could not be started at the time of my inspection as its engine components was damaged as a result of the accident.



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