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Your Ref: TP/IP/26221/2021 27th October 2021
Our Ref : CI/TPD21010017/P

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

MECHANICAL INSPECTION REPORT OF PRIME MOVER, XE 2159C

1. I refer to your request on 22nd September 2021 to conduct a physical inspection of a Prime Mover bearing registration number XE 2159C (herein referred to as "**Prime Mover**"), which was involved in a fatal road traffic accident on 28th May 2021.

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 physical inspection of the Prime Mover on 26th October 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

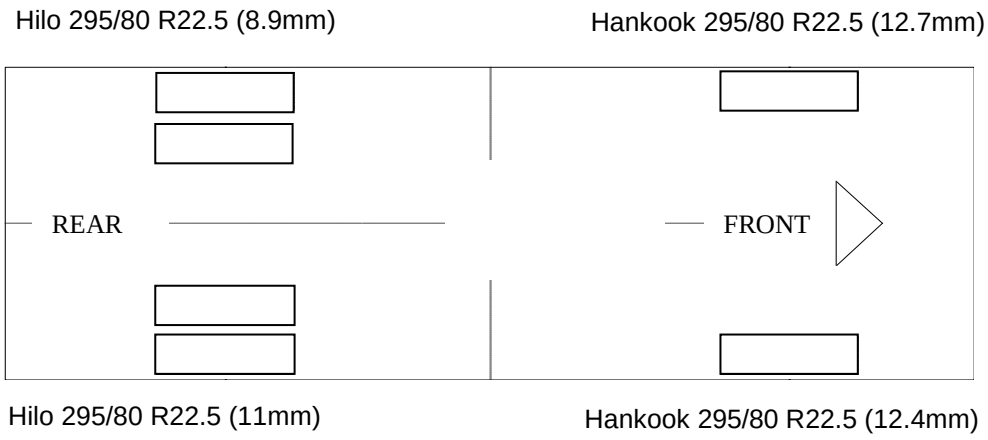
4. The mileage of the Prime Mover at the time of my inspection was 232,281km.

5. The Prime Mover was observed to have sustained damage at its right portion. Its right door panel was the body part that were damaged as a result of the accident.

Tyres and Wheel Rims

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

Prime Mover



7. The 6 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 instrument cluster of the Prime Mover at the time of my inspection. The mileage of the Prime Mover was 232,281km

Photo 2 shows a general view of the right body of the Prime Mover at the time of my inspection. The right portion of the Prime Mover was observed to sustained damage at the time of inspection. Its right door panel was amongst the body parts that were damaged as a result of the accident.

Photo 3 shows a close up view of the right body of the Prime Mover at the time of my inspection. The right portion of the Prime Mover was observed to sustained damage at the time of inspection. Its right door panel (circled) was amongst the body parts that were damaged as a result of the accident.

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

Photo 5 shows a general view of the front left body of the Prime Mover at the time of my inspection. The Prime Mover was observed to be intact and unaffected by the accident.

Photo 6 shows a general view of the Prime Mover's rear body at the time of my inspection. The Prime Mover was observed to be intact and unaffected 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 12.4mm. 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 Prime Mover.

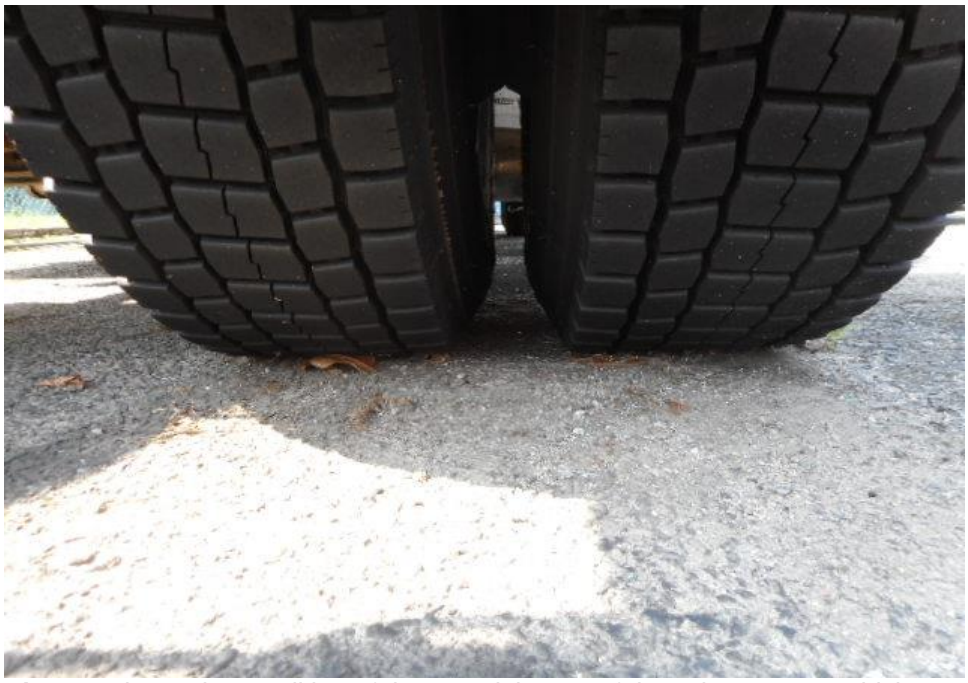


Photo 8 shows the condition of the rear right tyre of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 11mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

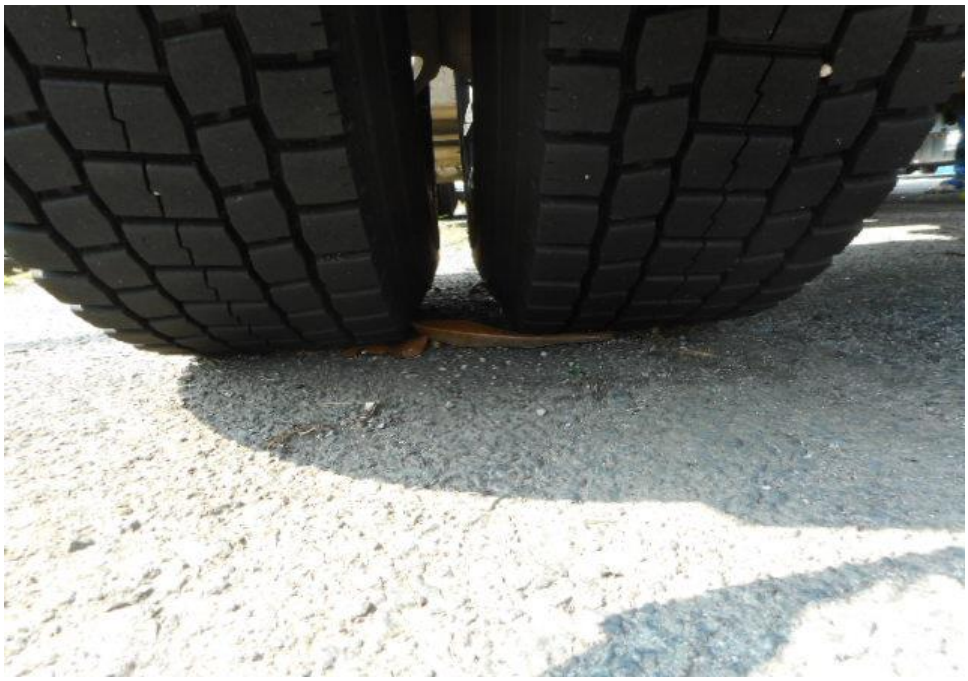


Photo 9 shows the condition of the rear left tyres of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 8.9mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 6 steel wheel rims of the 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 12.7mm. 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 Prime Mover.

Engine Compartment & Operating Fluids

8. Upon examination of the Prime Mover'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 Prime Mover.

10. My subsequent checks on the underside of the Prime Mover also revealed no fluid stain. Visually, the various undercarriage components of the Prime Mover were all observed to be intact and without any visible damage. See photo 11 – 16 below.

Photo 11 shows a general view of the Prime Mover's engine compartment, which was accessed by lifting the front cabin of the Prime Mover. 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

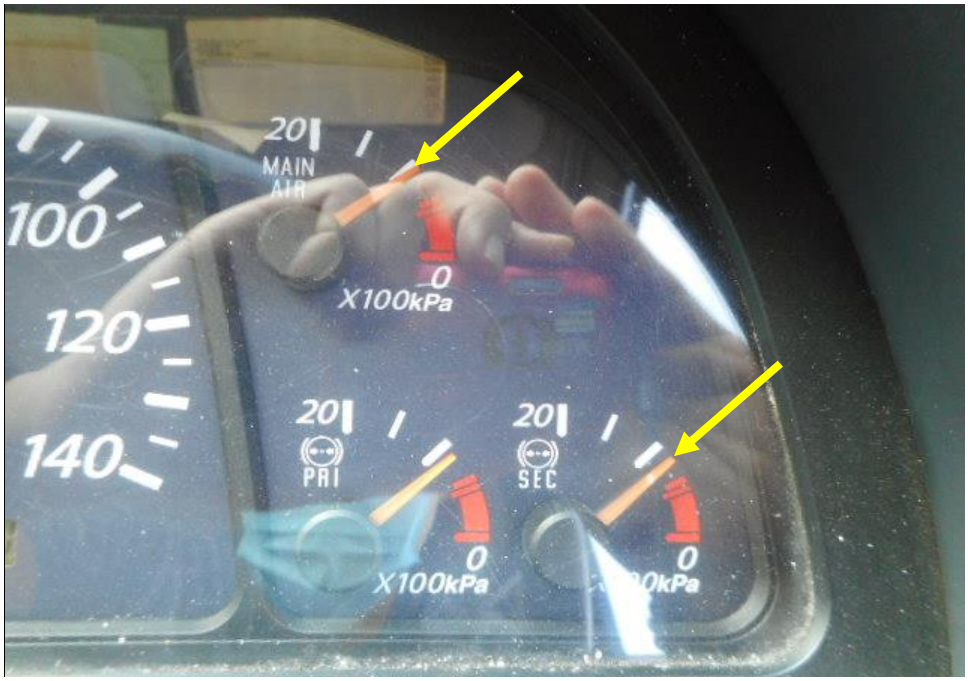


Photo 12 shows the air in the air brake cylinders of the Prime Mover at the time of my inspection. The air in the cylinder was observed to be of sufficient level & serviceable at the time of the accident.

Photo 13 shows the engine coolant reservoir of the Prime Mover at the time of my inspection. The engine coolant was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 14 shows the power steering fluid reservoir of the Prime Mover at the time of my inspection. The power steering fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 15 shows the engine oil dip stick of the Prime Mover at the time of my inspection. The engine oil was observed to be of insufficient level at the time of our inspection.

Photo 16 shows the undercarriage of the Prime Mover, 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 Prime Mover.

Steering System & Braking System

11. Static brake tests conducted on the Prime Mover 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 Prime Mover. The braking system of the Prime Mover 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 Prime Mover 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 17 - 25 below.

Photo 17 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 18 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 19 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.

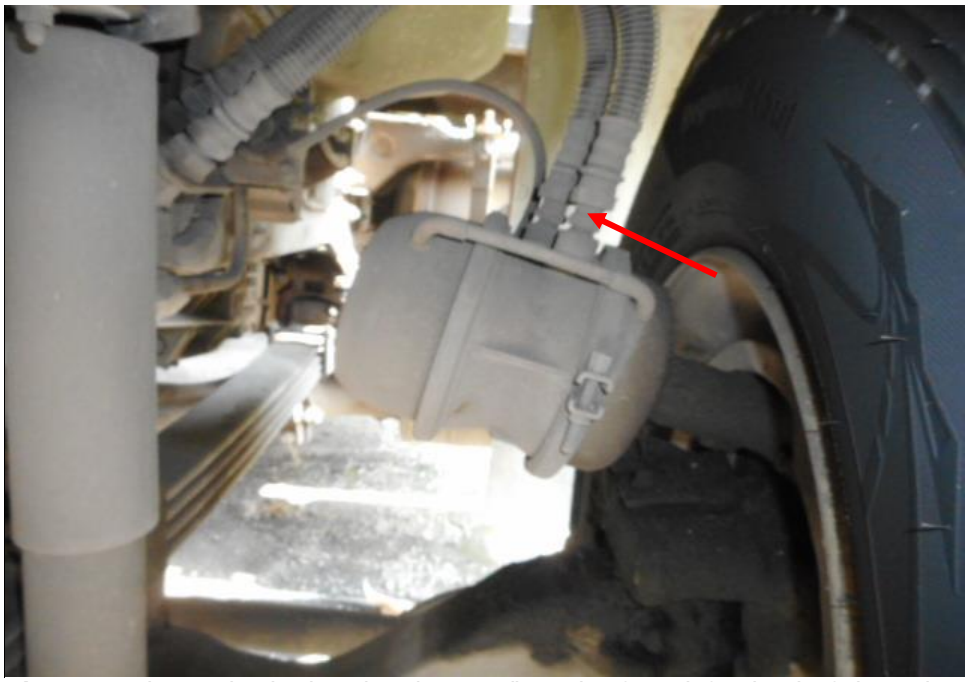


Photo 20 shows the brake pipe (arrowed) at the front left wheel of the Prime Mover. I did not observe any leakage of brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover's braking system, along with my visual examination of the various mechanical components 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.

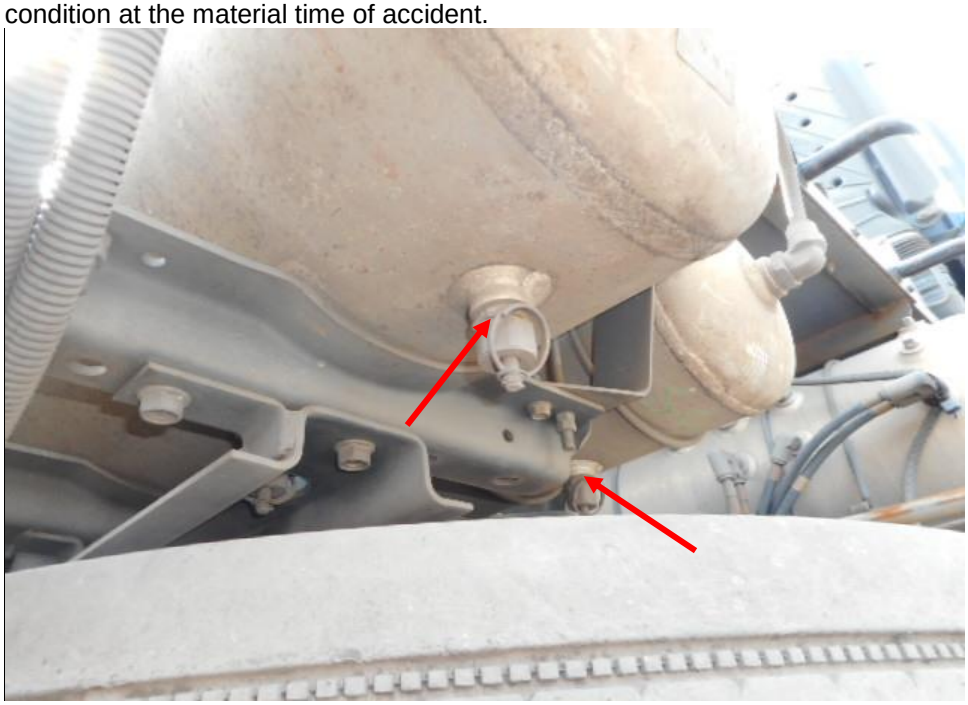


Photo 21 shows the air brake cylinders (arrowed) at the undercarriage of the Prime Mover. I did not observe any leakage of air brake fluid at the time of my inspection of the Prime Mover. My static tests of the Prime Mover's braking system, along with my visual examination of the various mechanical components 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.

Photo 22 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 23 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.

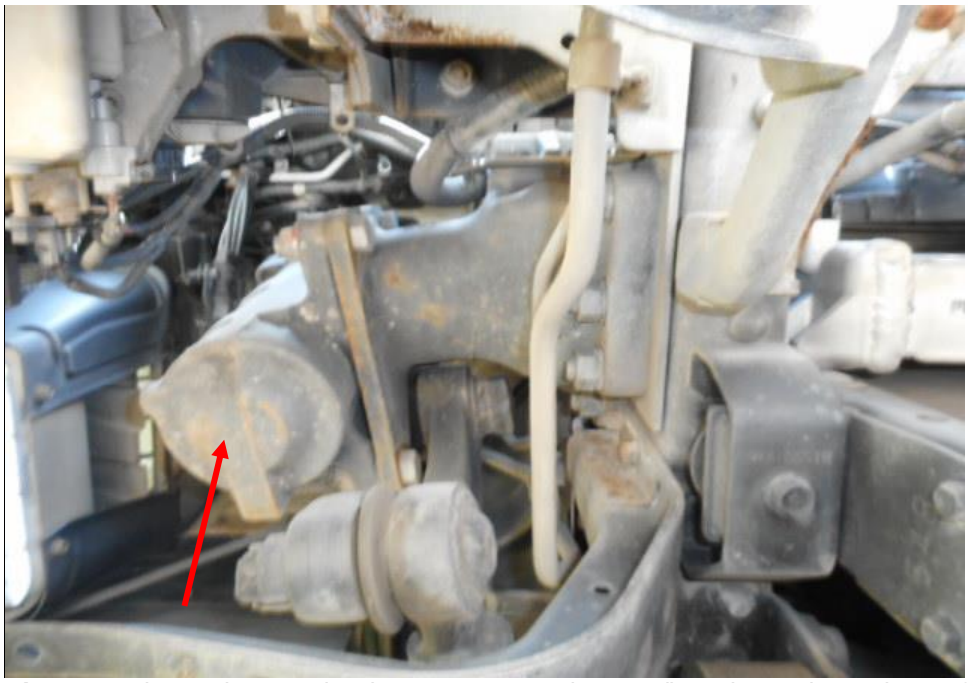


Photo 24 shows the steering box component (arrowed) at the undercarriage of the Prime Mover was found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 25 shows the front right wheel of the Prime Mover turned to its full left. 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 Prime Mover was likely to be in serviceable condition at the material time of accident.

Electronic Safety / Warning Indicators

13. The Prime Mover's automatic self-test of the functionality of its electronic operating systems like the Anti-Lock Brake System (ABS) and Traction Control System (TC) during cranking of the engine had indicated that the system were in working condition and without abnormality. This can be established from the warning lights disappearing from the instrument panel after the self-test. See photo 26 & 27 below.

Photo 26 shows the warning light for Anti-Lock Brake System (ABS) and Supplemental Restraint System (SRS) (arrowed) appearing on the instrument panel of the Prime Mover during the self-test of its various electronic operating systems when its engine was cranked.

Photo 27 shows no warning lights illuminated on the instrument panel of the Prime Mover after the engine was cranked. This would suggest that there was no abnormality to the electronic operating system of the Prime Mover, like the ABS, SRS and etc.

Seat Belts

14. The Front right and front left seat belts of the “Prime Mover” 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 Prime Mover

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

16. During the operational test, the various transmission gears of the Prime Mover 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 Prime Mover’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 Prime Mover was able to slow down and come to a complete stop upon depressing of the brake pedal. See photo 2 & 25.

Conclusion

17. From my physical inspection of the Prime Mover, 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 Prime Mover that may have caused and/or contributed to the accident. This is also taking into consideration that the operational test of the Prime Mover, 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 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 6 tyres. The 6 tyres of the Prime Mover were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 8.9mm – 12.7mm.

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