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Your Ref: TP/IP/00604/2023 6th April 2023
Our Ref : CI/TPD23001604/P

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

MECHANICAL INSPECTION REPORT OF MALAYSIAN TIPPER JKK 2899

1. I refer to your request on 7th February 2023 to conduct a physical inspection of a Malaysian Tipper bearing registration number JKK 2899 (herein referred to as "**Malaysian Tipper**"), which was involved in a road traffic accident on 7th January 2023.

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

3. Following the request, I had carried out a physical inspection of the Malaysian Tipper on 31st March 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

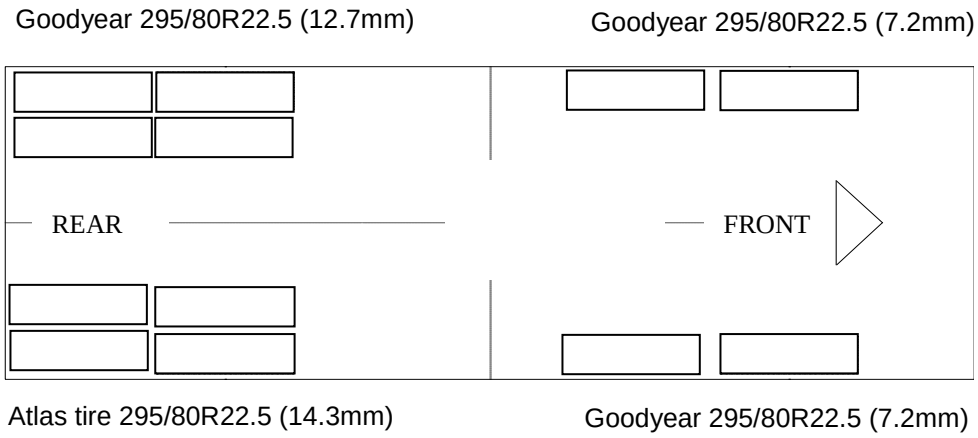
4. The mileage of the Malaysian Tipper at the time of my inspection was 959,845km.

5. The Malaysian Tipper was observed to sustain damaged on its Malaysian Tipper's front portion. Its front bumper left portion was damaged at the time of my inspection.

Tyres and Wheel Rims

6. The 4 front tyres and 8 rear tyres of the Malaysian Tipper 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 12 tyres of the Malaysian Tipper. The tyre brand, tyre size and remaining tread depth of the 12 tyres of the Malaysian Tipper were recorded as follows:-

Malaysian Tipper



7. The 12 tyres of the Malaysian Tipper 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 Malaysian Tipper at the time of my inspection. The mileage of the Malaysian Tipper was 959,845km

Photo 2 shows a general view of the front body of the Malaysian Tipper at the time of my inspection. The Malaysian Tipper was observed to sustain damaged at its front portion. Its front bumper left portion was damaged at the time of my inspection.

Photo 3 shows a general view of the front body of the Malaysian Tipper at the time of my inspection. The Malaysian Tipper was observed to sustain damaged on its front portion. Its front bumper left portion (circled) was damaged at the time of my inspection.

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

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

Photo 6 shows a general view of the Malaysian Tipper's rear body at the time of my inspection. The Malaysian Tipper was observed to be intact and unaffected by the accident.

Photo 7 shows the condition of the front right tyre of the Malaysian Tipper, which was observed to be in serviceable condition with remaining tread depth of approximately 7.2mm. 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 12 tyres that were fitted on the Malaysian Tipper.

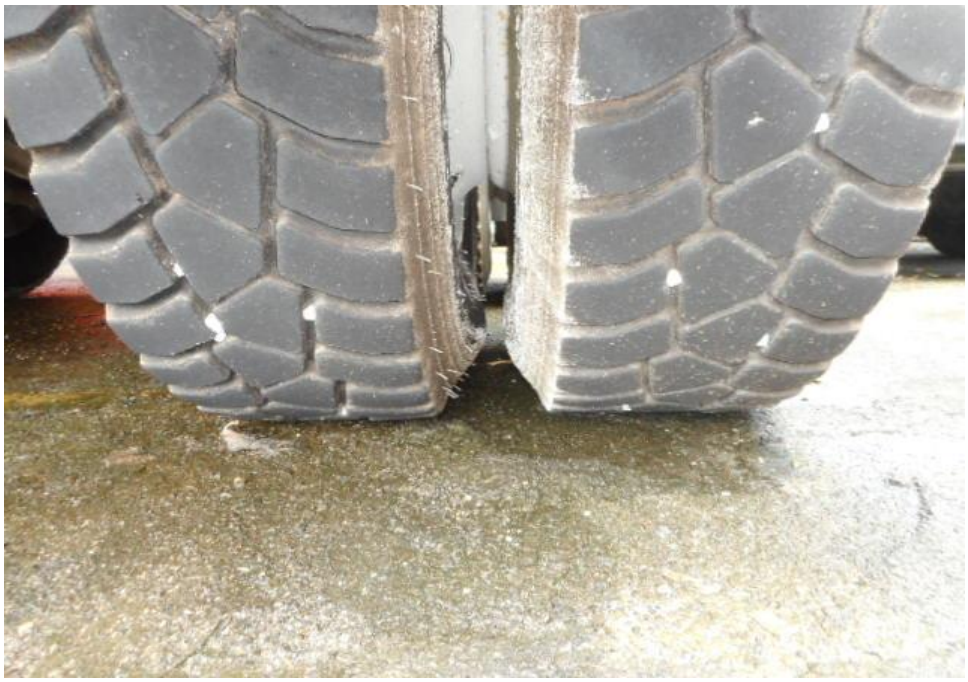


Photo 8 shows the condition of the rear right tyres of the Malaysian Tipper, which was observed to be in serviceable condition with remaining tread depth of approximately 14.3mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 9 shows the condition of the rear left tyres of the Malaysian Tipper, which was observed to be in serviceable condition with remaining tread depth of approximately 12.7mm. 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 12 steel wheel rims of the Malaysian Tipper.

Photo 10 shows the condition of the front left tyres of the Malaysian Tipper, which were observed to be in serviceable condition with remaining tread depth of approximately 11.6mm. 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 12 tyres that were fitted on the Malaysian Tipper.

Engine Compartment & Operating Fluids

8. Upon examination of the Malaysian Tipper'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 Malaysian Tipper.

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

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

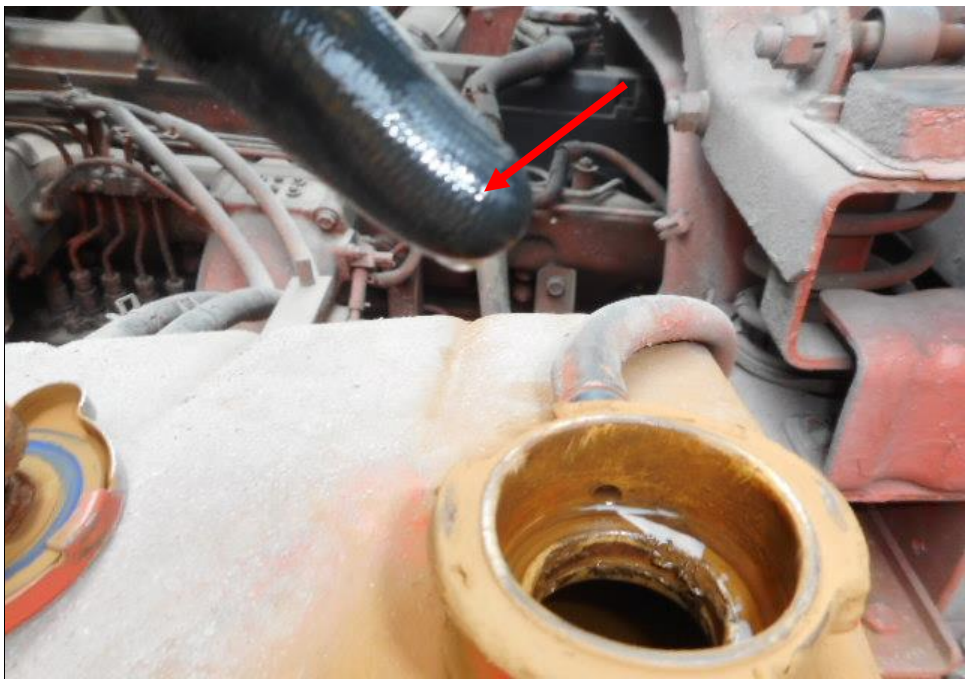


Photo 13 shows the engine coolant reservoir of the Malaysian Tipper at the time of my inspection. The engine coolant was observed to be of sufficient level (arrowed) and without any visible contamination.

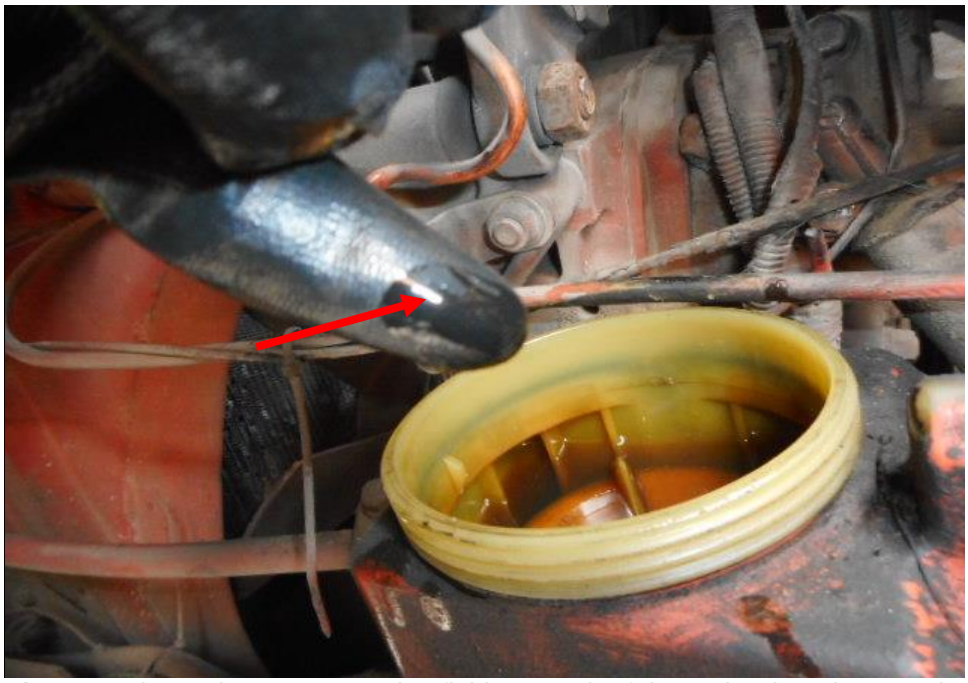


Photo 14 shows the power steering fluid reservoir of the Malaysian Tipper at the time of my inspection. The power steering fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 15 shows the engine oil dip stick of the Malaysian Tipper 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 Malaysian Tipper, at the area where the engine housing located. I did not find any sign(s) or indication(s) of fluid leak on the underside of the Malaysian Tipper.

Steering System & Braking System

11. Static brake tests conducted on the Malaysian Tipper 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 Malaysian Tipper. The braking system of the Malaysian Tipper 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 Malaysian Tipper 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.

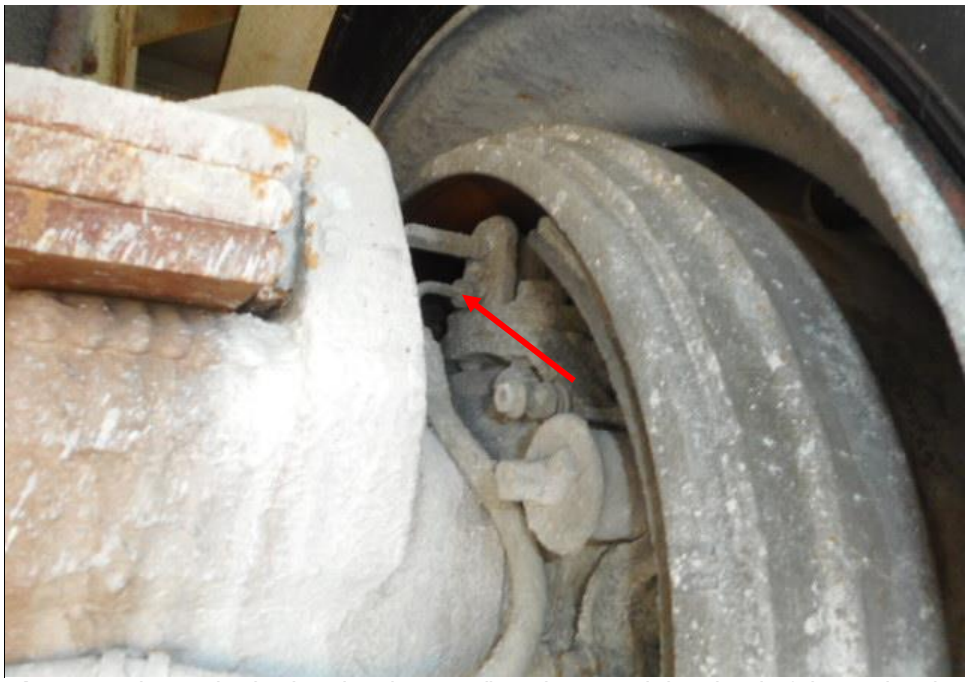


Photo 17 shows the brake pipe (arrowed) at the rear right wheel of the Malaysian Tipper. I did not observe any leakage of brake fluid at the time of my inspection of the Malaysian Tipper. My static tests of the Malaysian Tipper's braking system, along with my visual examination of the various mechanical components in the braking system, had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Malaysian Tipper 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 Malaysian Tipper. I did not observe any leakage of brake fluid at the time of my inspection of the Malaysian Tipper. My static tests of the Malaysian Tipper'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 Malaysian Tipper was likely to be in serviceable condition at the material time of accident.

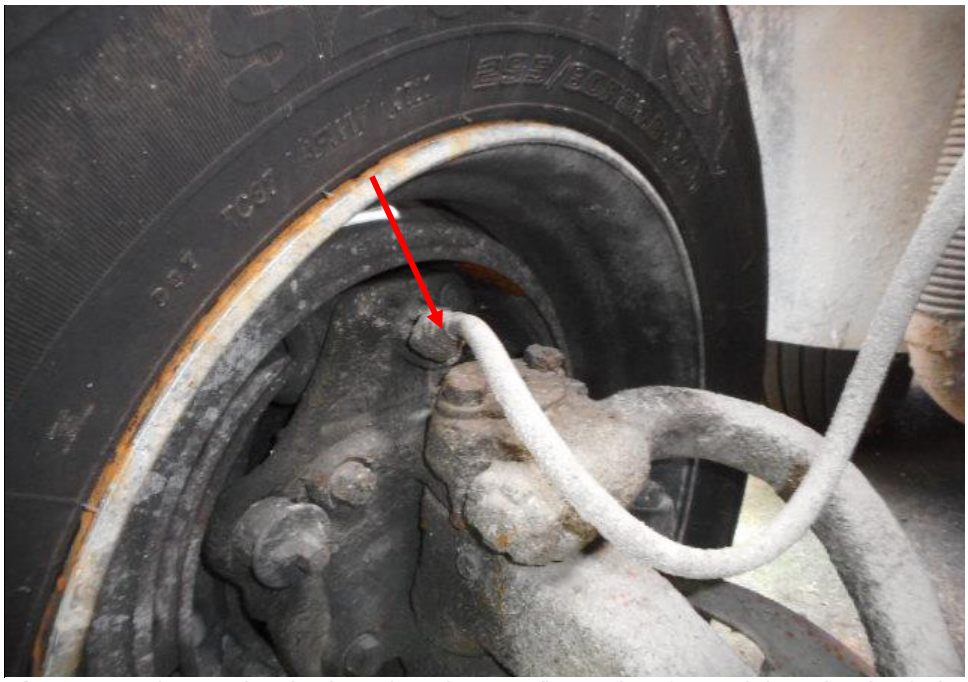


Photo 19 shows the brake pipe (arrowed) at the front right wheel of the Malaysian Tipper. I did not observe any leakage of brake fluid at the time of my inspection of the Malaysian Tipper. My static tests of the Malaysian Tipper's braking system, along with my visual examination of the various mechanical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

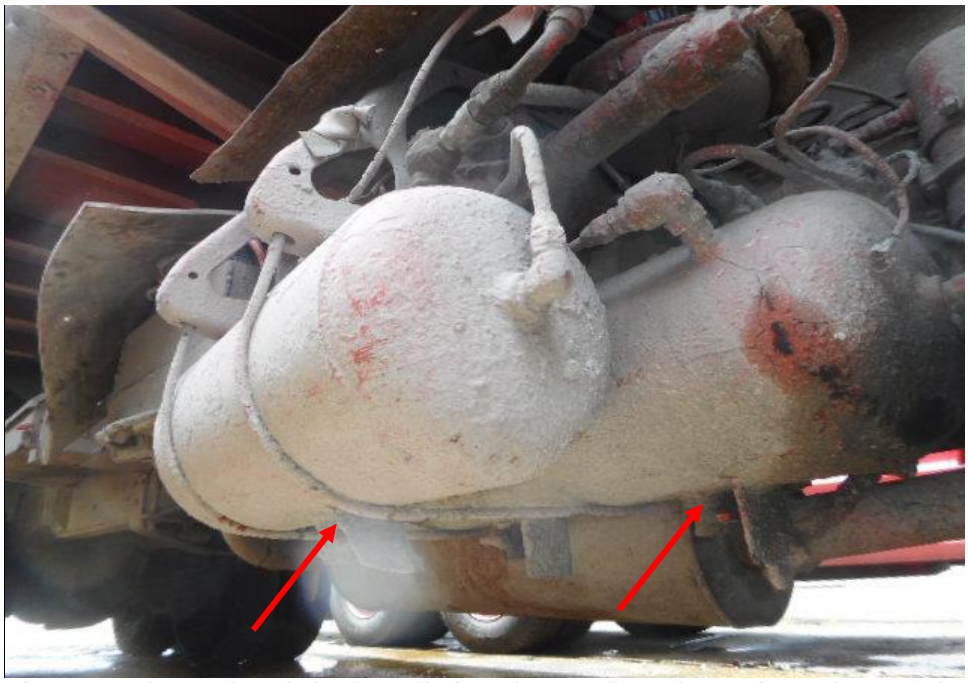


Photo 21 shows the air brake cylinders (arrowed) at the undercarriage of the Malaysian Tipper. I did not observe any leakage of air brake fluid at the time of my inspection of the Malaysian Tipper. My static tests of the Malaysian Tipper's braking system, along with my visual examination of the various mechanical components in the braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system of the Malaysian Tipper was likely to be in serviceable condition at the material time of accident.

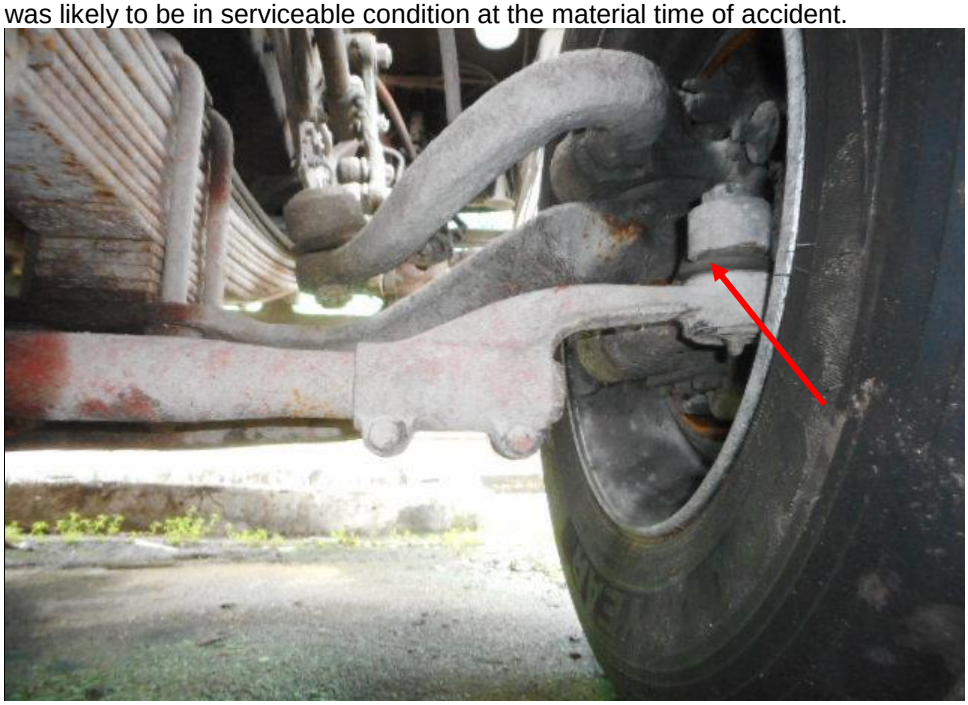


Photo 22 shows the various undercarriage components at the front right wheel of the Malaysian Tipper, in particular the steering tie rod end (arrowed). The various steering components were all found to be intact, suggesting that the steering system of the Malaysian Tipper was likely to be in serviceable 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 Malaysian Tipper, in particular the steering tie rod end (arrowed). The various undercarriage components of the Malaysian Tipper 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.

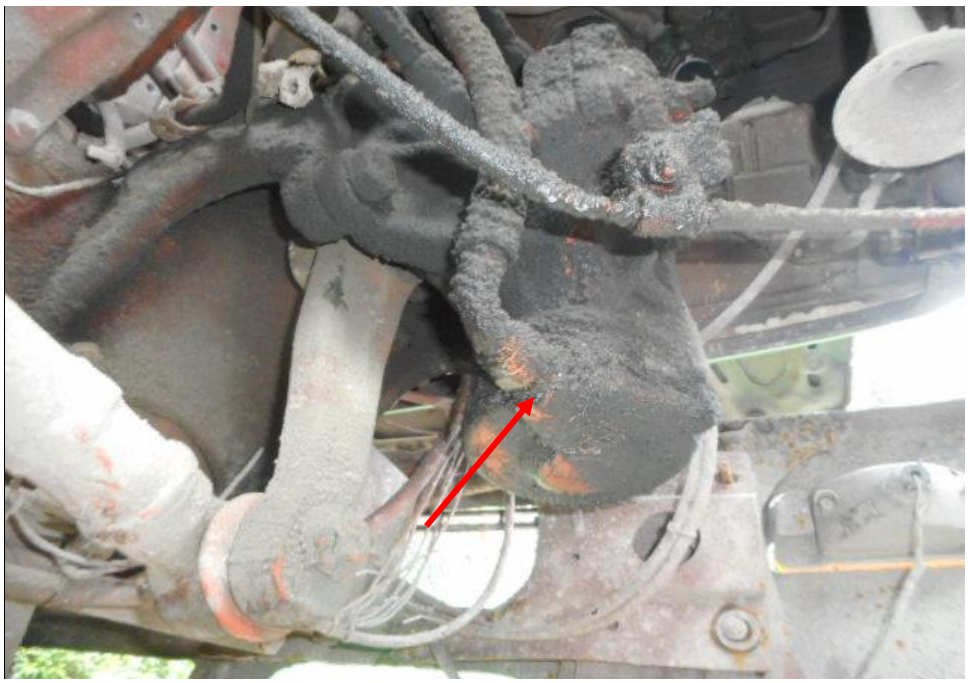


Photo 24 shows the steering box component (arrowed) at the undercarriage of the Malaysian Tipper was found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 25 shows the front left wheel of the Malaysian Tipper 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 Malaysian Tipper was likely to be in serviceable condition at the material time of accident.

Electronic Safety / Warning Indicators

13. The Malaysian Tipper'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 "Malaysian Tipper" 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 Malaysian Tipper

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

16. During the operational test, the various transmission gears of the Malaysian Tipper 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 Malaysian Tipper'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 Malaysian Tipper 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 Malaysian Tipper, 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 Malaysian Tipper that may have caused and/or contributed to the accident. This is also taking into consideration that the operational test of the Malaysian Tipper, 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 4 front tyres, 8 rear tyres fitted on the Malaysian Tipper were 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 Malaysian Tipper 12 tyres. The 12 tyres of the Malaysian Tipper were observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 7.2mm – 14.3mm.

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