LKK Auto Consultants Pte Ltd
Company Registration No. 199607198R
51 UBI AVE 1, #01-25 PAYA UBI INDUSTRIAL PARK, SINGAPORE 408933 TEL : (065) 62563561 FAX : (065) 67414108

Your Ref: TP/IP/08075/2022 5th May 2022
Our Ref : CI/TPD22003619/P

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

MECHANICAL INSPECTION REPORT OF TIPPER TRUCK XE 3002P

1. I refer to your request on 14th April 2022 to conduct a physical inspection of an Tipper Truck bearing registration number XE 3002P (herein referred to as "**Tipper Truck**"), which was involved in a road traffic accident on 10th April 2022.

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

3. Following the request, I had carried out a visual inspection of the Tipper Truck on 27th April 2022 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.

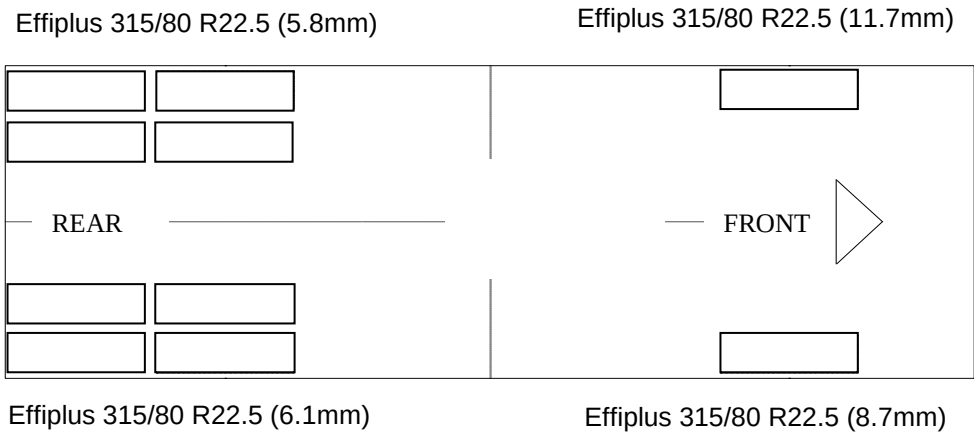
General Condition

4. The mileage of the Tipper Truck at the time of my inspection was not recorded. Due to the damage that front cabin had sustained from the accident blocked the entry to the Tipper Truck.

5. The Tipper Truck was observed to have sustained damage at its front portion. Its front cabin, front windscreen, front body panel, front bumper, front left and right doors were amongst the body parts that were damaged as a result of the accident.

Tyres and Wheel Rims

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



7. The 10 tyres of the Tipper Truck were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 12 below.

Photo 1 shows a general view of the front body of the Tipper Truck at the time of my inspection. The Tipper Truck was observed to have sustained damage at its frontal portion. Its front cabin, front windscreen, front body panel, front bumper, front left and right doors were amongst the body parts that were damaged as a result of the accident.

Photo 2 shows the close up view of the Tipper Truck front body at the time of my inspection. The Tipper Truck was observed to have sustained damage at its front cabin (arrowed) and front windscreen (circled), as a result of the accident.

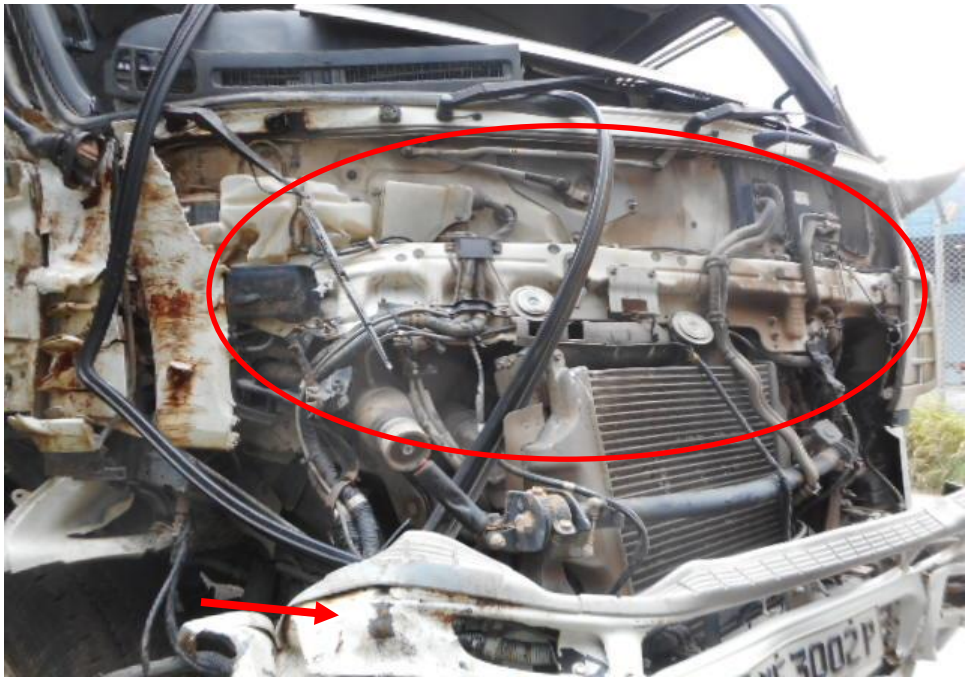


Photo 3 shows the close up view of the Tipper Truck front body at the time of my inspection. The Tipper Truck was observed to have sustained damage at its front body panel (circled) and front bumper (arrowed) was also damaged as a result of the accident.

Photo 4 shows the close up view of the Tipper Truck front body at the time of my inspection. The Tipper Truck was observed to have sustained damage at its front right door (circled) as a result of the accident.

Photo 5 shows the close up view of the Tipper Truck front body at the time of my inspection. The Tipper Truck was observed to have sustained damage at its front left door (circled) as a result of the accident.

Photo 6 shows a general view of the right body of the Tipper Truck at the time of my inspection, it was observed to have been unaffected by the accident.

Photo 7 shows a general view of the left body of the Tipper Truck at the time of my inspection, it was observed to have been unaffected by the accident.

Photo 8 shows a general view of the Tipper Truck's rear body at the time of my inspection. There was no damage found to the rear portion of the Tipper Truck.

Photo 9 shows the condition of the front right tyre of the Tipper Truck, which was observed to be in serviceable condition with remaining tread depth of approximately 8.7 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 Tipper Truck.

Photo 10 shows the condition of the rear right tyre of the Tipper Truck, which was observed to be in serviceable condition with remaining tread depth of approximately 6.1mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 11 shows the condition of the rear left tyres of the Tipper Truck, which was observed to be in serviceable condition with remaining tread depth of approximately 5.8mm. 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 Tipper Truck.

Photo 12 shows the condition of the front left tyres of the Tipper Truck, which were observed to be in serviceable condition with remaining tread depth of approximately 11.7mm. 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 10 tyres that were fitted on the Tipper Truck.

Engine Compartment & Operating Fluids

8. The engine compartment of the Tipper Truck was located below the front cabin of the Tipper Truck. I was not able to carry out any checks on the engine compartment as the cabin of the Tipper Truck was not able to be lifted to view the engine compartment as the cabin is damaged as a result of the accident.

9. However, we were able to view the engine coolant and the power steering fluid which were located outside of the engine compartment. They were observed to be sufficient level for operating purposes and there was no contamination found to these fluids See photo 13 - 15 below.

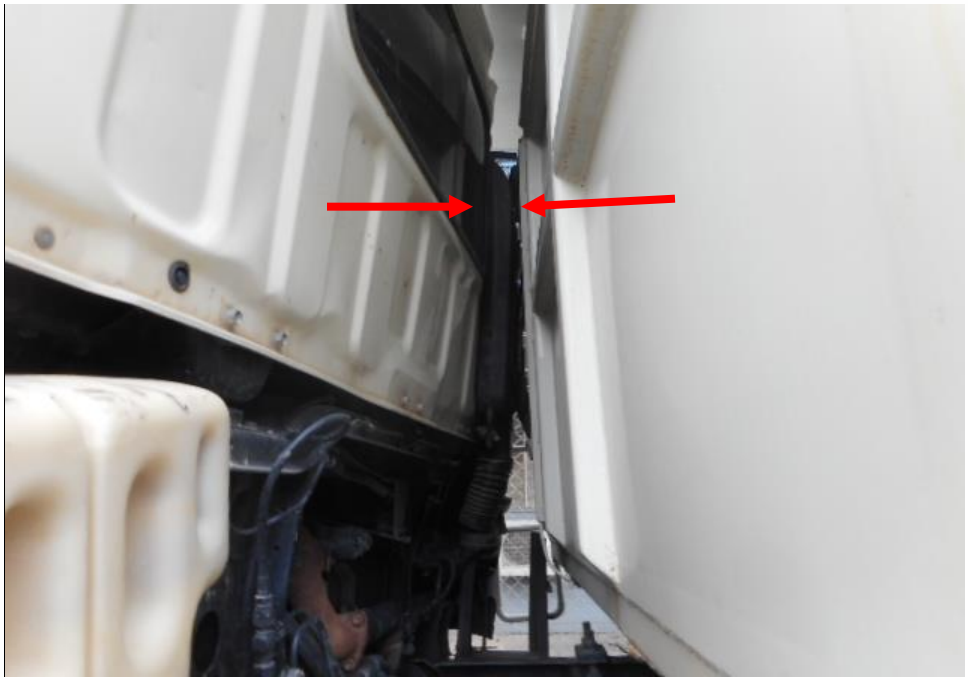


Photo 13 shows the close up view of the Tipper Truck front underside at the time of my inspection. The Tipper Truck was observed to have sustained damage at its engine, its oil hoses (red arrow) and radiator (yellow arrow) was also damaged as a result of the accident.

Photo 14 shows checks being carried out to the engine coolant of the Tipper Truck 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 checks being carried out to the power steering fluid of the Tipper Truck at the time of my inspection. The power steering fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Steering System & Braking System

10. The steering box component was observed to be damaged as a result of the accident. However, the steering shaft and steering rack of the Tipper Truck 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. The steering system could not be tested at the time of my inspection, due to the block access to the cabin and the damaged steering box component. See photo 16 - 18 below.

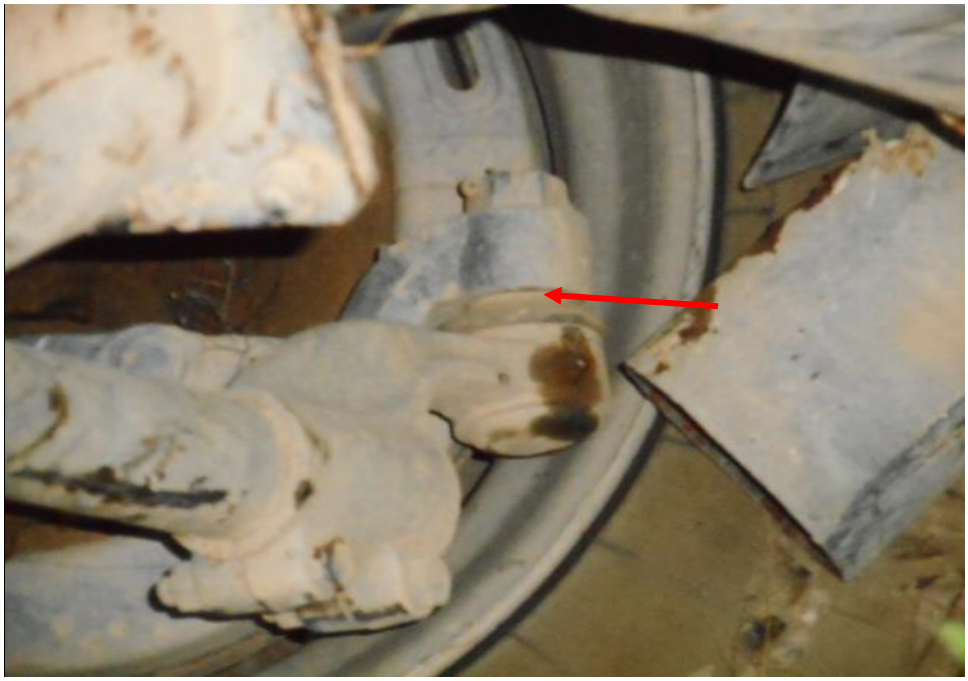


Photo 16 shows the various undercarriage components at the front right wheel of the Tipper Truck, in particular the steering tie rod end (arrowed). The various steering components were all found to be intact, suggesting that the steering system of the Tipper Truck was likely to be in serviceable condition at the material time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Photo 17 shows the various undercarriage components at the front left wheel of the Tipper Truck, in particular the steering tie rod end (arrowed). The various undercarriage components of the Tipper 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 18 shows the steering box component (arrowed) at the undercarriage of the Tipper Truck was found to be damaged as a result of the accident.

12. The braking system of the Tipper Truck 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 Tipper Truck could not be started, I was 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 Tipper Truck. The front right air pipe was observed to be damaged and broken off the air brake unit of the front right wheel as a result of the accident. However, all the other 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. See photo 19 - 23 below.

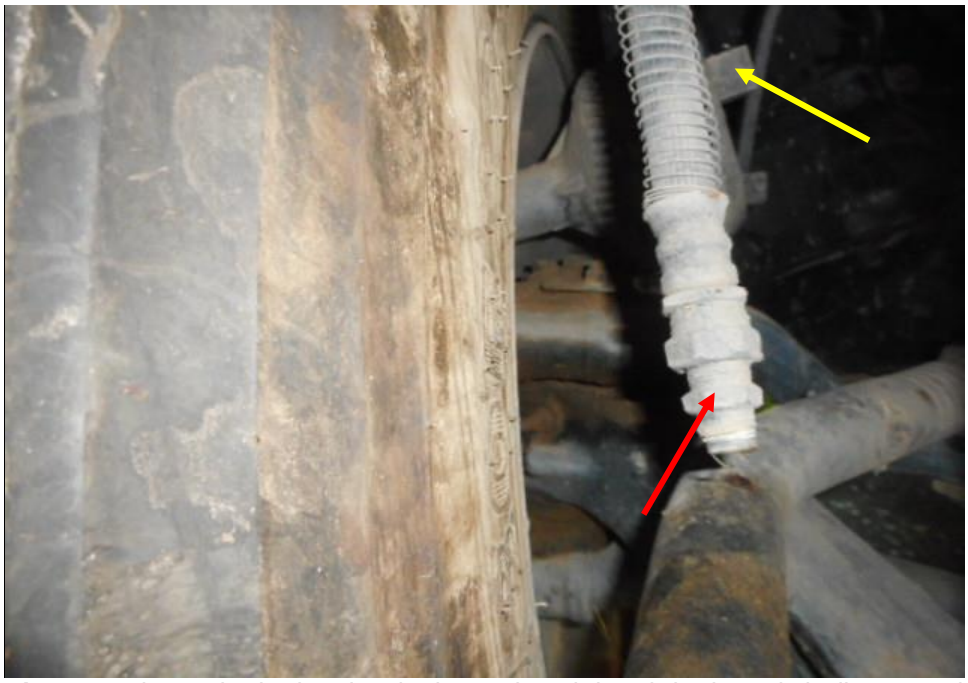


Photo 19 shows the brake pipe (red arrow) and the air brake unit (yellow arrow) of the front right wheel of the Tipper Truck, it was observed to be damaged and broken off as a result of the accident.

Photo 20 shows the brake pipe (arrowed) at the front left wheel of the Tipper Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Tipper Truck and the various mechanical components was observed to be intact.

Photo 21 shows the brake pipe (arrowed) at the rear right wheel of the Tipper Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Tipper Truck and the various mechanical components was observed to be intact.

Photo 22 shows the brake pipe (arrowed) at the rear left wheel of the Tipper Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Tipper Truck and the various mechanical components was observed to be intact.

Photo 23 shows the air brake cylinders (arrowed) at the undercarriage of the Tipper Truck. I did not observe any leakage of brake fluid at the time of my inspection of the Tipper Truck and the various mechanical components was observed to be intact.

Electronic Safety / Warning Indicators

14. 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 Tipper Truck engine could not started up.

Operational Behaviour of the Tipper Truck

15. As the engine of the Tipper Truck 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

16. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Tipper Truck that may have contributed to the accident. The extent of damage that it had sustained had prevented me from Carrying out any operational test(s) and/or static test(s) to its engine system, transmission system, steering system, braking system and suspension system.

17. The 10 tyres fitted on the Tipper Truck 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 Tipper Truck 10 tyres. The 10 tyres of the Tipper Truck were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 5.8mm – 11.7mm.

18. My findings were based solely on a static and visual inspection of the Tipper Truck. No operational test(s) could be carried out to the Tipper Truck as its engine could not be started at the time of my inspection as a result of the accident.

Sherwin Beh
Technical Investigator

Ang Bryan Tani
AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA
Senior Technical Investigator
Technical Investigation & Reconstructionist (SAE-A)