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Your Ref: TP/IP/39647/2018
Our Ref : CI/TPD18014218/Z

01st November 2018

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

MECHANICAL INSPECTION REPORT OF MOTOR LORRY GBD 9032D.

1. We refer to your request on 02nd August 2018 to conduct a physical inspection of a Motor Lorry bearing registration number GBD 9032D (herein referred to as "**Motor Lorry**"), which was involved in a fatal road traffic accident on 12th July 2018.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Lorry that may have contributed to the accident.
3. Following the request, we had carried out a physical inspection of the Motor Lorry on 31st August 2018 at the premises of Traffic Police vehicle pound, 517 Airport Road Singapore 539942. We now set out below our observations and comments with respect to this inspection.

General Condition

4. The mileage of the Motor Lorry at the time of our inspection was 97925km.
5. The Motor Lorry was observed to have sustained damages at its rear right tail lamp and bracket support were amongst the body parts that were damaged as a result of the accident.
6. Further observation reveals that minor damages/scratches were also found on the left portion which was not related to the accident.
7. This was likely due to the consistency of the accident's case facts that a motorcyclist (NCY1262) was travelling along PIE (Tuas), 36.5km on left of the 2 lanes road when it suddenly collided into the rear of a Motor Lorry (GBD 9032D) that was travelling on the left lane, directly ahead of him. Due to the impact, the deceased skidded to the right side and encroached into the travelling path of Motor Taxi (SHA 7941M) that was travelling on the right lane. As it was too sudden, the Motor Taxi was unable to brake in time hence collided into the Motorcycle. See photo 1 to 6 below.



Photo 1 shows the mileage of the Motor Lorry was 97925km.



Photo 2 shows a general view of the front left body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good condition unaffected by the accident.



Photo 3 shows the damages to the rear right tail lamp & lock bracket as a result of the accident.



Photo 4 shows a general view of the rear body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to sustained damages to the rear right tail lamp & lock bracket as a result of the accident.



Photo 5 shows a general view of the front right body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed to be in good general condition at time of inspection.



Photo 6 shows a general view of the front left body of the Motor Lorry at the time of our inspection. The Motor Lorry was observed sustained minor damages that were believe not related to the accident.

Tyres and Wheel Rims

8. The 6 tyres were observed to be in serviceable condition and sufficiently inflated for vehicular operation. We 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. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Motor Lorry were recorded as follows:-

Green-Max Van 165 R13C (4mm)

CST Tires.CL-31 195 R15C (5mm)



Westlake Radial SL305 165 R13C (2mm)

Green-Max Van 195 R15C (7mm)

9. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any significant damage except for some marks of grazing nature on the wheel rims, which are commonly associated to grazing against a road kerb. See photo 7 – 10 below.



Photo 7 shows the condition of the front right tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 7mm.



Photo 8 shows the condition of the front left tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 5mm. The tyre, which was wrapped around standard wheel rim, was also observed to be sufficiently inflated for vehicular operation.



Photo 9 shows the condition of the rear left tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. The tyre, which was wrapped around standard wheel rim, was also observed to be sufficiently inflated for vehicular operation.



Photo 10 shows the condition of the rear right tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 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 tyre, which was also sufficiently inflated for vehicular operation.

Engine Compartment & Operating Fluids

10. Upon examination of the Motor Lorry's engine compartment, we had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, engine oil, 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.
11. Further examination of the engine compartment revealed no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment of the Motor Lorry.
12. Our subsequent checks on the underside of the Motor Lorry revealed no fluid stain. Visually, the various undercarriage components of the Motor Lorry were all observed to be intact and without any visible damage. See photo 11 – 15 below.



Photo 11 shows a general view of the Motor Lorry's engine compartment. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment.



Photo 12 shows the brake fluid reservoir of the Motor Lorry at the time of our inspection. The brake fluid was observed to be of sufficient level and without any visible contamination.



Photo 13 shows the power steering fluid reservoir of the Motor Lorry at the time of our inspection. The power steering fluid was observed to be of sufficient level and without any visible contamination.



Photo 14 shows the engine coolant reservoir of the Motor Lorry at the time of our inspection. The engine coolant was observed to be of sufficient level and without any visible contamination.



Photo 15 shows the engine dip stick of the Motor Lorry at the time of our inspection. The engine oil was observed to be of sufficient level and without any visible contamination.

Steering System & Braking System

13. The mechanical components of the Motor Lorry's steering system and braking system were all found to be visually intact and undamaged. Our visual examination of the various steering components, which had included the rack and pinion, tie rods, tie rod ends and ball joints, revealed that these components were all generally in good condition. Components of the braking system like the brake master pump, brake booster, brake callipers and brake hoses amongst others were also found to be without any damage upon our visual inspection.
14. Although the steering system could not be tested at the time of our inspection (engine unable to be started likely due to the malfunction of the starter components), it was likely that the steering system of the Motor Lorry was in serviceable condition at the material time of accident since its mechanical components were all found to be generally intact and securely fitted.

15. Static brake tests conducted on the Motor Lorry revealed no abnormality. The 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 Lorry. The braking system of the Motor Lorry was likely to be in serviceable condition at the material time of the accident. This was also taking into consideration that the brake fluid was of sufficient level, and also that there was no sign(s) of brake fluid leakage along the brake hoses and brake pipes. See photo 16 - 19 below.



Photo 16 shows the various undercarriage components at the rear left wheel of the Motor Lorry, in particular the brake hose (arrowed). We did not observe any leakage of brake fluid at the time of our inspection of the Motor Lorry.



Photo 17 shows the brake hose at the front left wheel of the Motor Lorry. We did not observe any leakage of brake fluid. Our visual inspection of the various mechanical components of the Motor Lorry's braking system revealed all to be intact and without visible damage, indicating that the braking system was likely to be in serviceable condition at the material time of accident.



Photo 18 shows the brake hose (arrowed) at the front right wheel of the Motor Lorry. We did not observed any leakage of brake fluid at the time of our inspection of the Motor Lorry. Our visual inspection of the various mechanical components of the Motor Lorry's braking system, including its brake calliper, revealed all to be intact and without visible damage.



Photo 19 shows the various undercarriage components at the rear right wheel of the Motor Lorry. The various steering components were all found to be intact, suggesting that the steering system of the Motor Lorry was likely to be in serviceable condition at the material time of accident.

Electronic Safety / Warning Indicators

16. The Motor Lorry was not fitted with electronic safety feature(s) like Anti-Brake Lock System (ABS). However, electronic safety feature(s) such as Supplementary Restraint System (SRS), Battery check, Engine check & etc, were unable to be tested. It was due to the engine unable to be started likely caused by the malfunction of the starter components. This was likely due to the long period of inactivity of the operations to the engine. There was hence no test carried out on the functionality of these systems.

Operational Behaviour of the Motor Lorry

17. We were also not able to carry out any operational test to primarily determine whether there was any operational abnormality to the engine system, transmission system, steering system and braking system of the Motor Lorry due to the engine unable to be started likely caused by the malfunction of the starter components as a result of long period of inactivity to the engine.

Conclusion

18. At the time of our inspection of the Motor Lorry, its steering system and braking system could not be tested as the Motor Lorry's engine could not be started likely caused by the malfunction of the starter components as a result of long period of inactivity to the engine. However basing purely on our observations, it would appear that the steering system and braking system of the Motor Lorry were in serviceable condition. This is taking into consideration that all the various mechanical components were found to be intact and undamaged.
19. The observations gathered from our physical inspection of the Motor Lorry had indicated no evidence to suggest possible mechanical failure to the Motor Lorry that may have contributed to the accident.
20. The 6 tyres of the Motor Lorry were also found to be in serviceable condition. 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. The 6 tyres were sufficiently inflated for vehicular operation with remaining tread depth of approximately 2mm to 7mm each.
21. Our findings were based solely on a static and visual inspection of the Motor Lorry. No operational test could be carried out to the Motor Lorry due to it was unable to be started at time of inspection.



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