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Your Ref: TP/IP/31659/2018
Our Ref : CI/TPD18011357/Z

20th September 2018

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

MECHANICAL INSPECTION REPORT OF MOTOR TRAILER XD 8794/ TRC 7350P

1. We refer to your request on 08th June 2018 to conduct a physical inspection of a motor trailer bearing registration number XD 8794/ TRC 7350P (herein referred to as "**Motor Trailer**"), which was involved in a fatal road traffic accident on 29th May 2018.

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

3. Following the request, we had carried out a physical inspection of the Motor Trailer on 06th July 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 Trailer at the time of our inspection was recorded at 101871.6 km.

5. The Motor Trailer was found to sustained minor damages on the rear right portion at the time of our inspection. Its steel crash bar was observed to be dented inwards & its rear right mud guard was found to be pushed towards the last rear tyre as a result of the accident.

6. This was likely due to the consistency of the accident's case facts that on 29th May 2018 at about 0623hrs along ECP towards Airport, a motorcycle (JQV4563) had collided onto the rear of the Motor Trailer. See photo 1 to 7.

Photo 1 shows the mileage of the Motor Trailer at the time of our inspection was recorded at 101871.6 km.

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

Photo 3 shows a general view of the front right body of the Motor Trailer at the time of our inspection. It was observed to be in good condition unaffected by the accident.

Photo 4 shows a general view of the front left body of the Motor Trailer at the time of our inspection. It was observed to be in good condition unaffected by the accident.

Photo 5 shows a general view of the rear body of the Motor Trailer at the time of our inspection. It was observed to have sustained minor damages on the rear right crash bar due to the accident's impact collision.

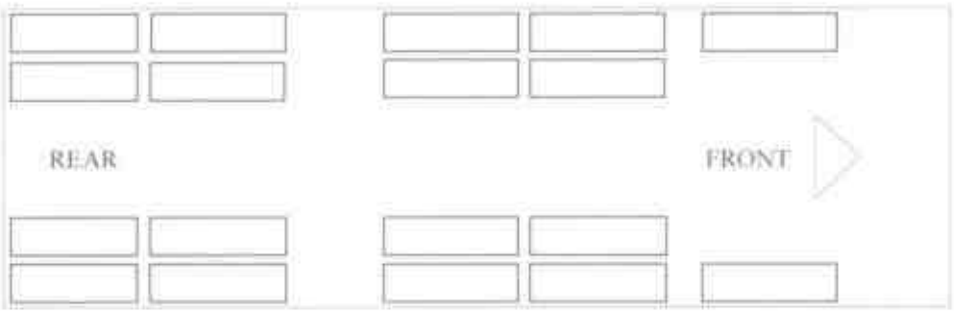
Photo 6 shows a semi-close-up view of the rear body of the Motor Trailer at the time of our inspection. It was observed to have sustained minor damages on the rear right crash bar due to the accident's impact collision.

Photo 7 shows a close-up view of the rear right steel mud guard of the Motor Trailer at the time of our inspection. It was observed to have sustained minor damages due to the accident's impact collision.

Tyres and Wheel Rims

7. The 18 tyres fitted on the Motor Trailer were all 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 18 tyres. The tyre brand, tyre size and remaining tread depth of the Motor Trailer's 18 tyres were recorded as follows:-

Bridgestone 10.00/20 (8mm)	H101 10.00/20 (5mm)	Ling Long D960 315/80 R22.5 (5mm)	Ling Long LLF02 315/80 R22.5 (6mm)	LEAO A918 315/80 R22.5 (9mm)



Ling Long 10.00/20 (8mm)	CEAT Fleet Master 10.00/20 (5mm)	Ling Long F860 315/80 R22.5 (8mm)	Good Year 315/80 R22.5 (7mm)	LEAO A918 315/80 R22.5 (9mm)

8. The 18 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 8 – 17 below.

Photo 8 shows the condition of the front left tyre of the Motor Trailer, which was observed to be in serviceable condition with remaining tread depth of approximately 9mm.

Photo 9 shows the condition of the front right tyre of the Motor Trailer, which was observed to be in serviceable condition with remaining tread depth of approximately 9mm.

Photo 10 shows the condition of the left 2nd row tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 6mm. The tyres were also observed to be sufficiently inflated for vehicular operation.

Photo 11 shows the condition of the left 3rd row tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 5mm. The tyres were also observed to be sufficiently inflated for vehicular operation.

Photo 12 shows the condition of the left 4th row tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 5mm. The tyres were also observed to be sufficiently inflated for vehicular operation.

Photo 13 shows the condition of the rear left tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining, tread depth of approximately 8mm. The tyres, which were wrapped around standard alloy wheel rims, were also observed to be sufficiently inflated for vehicular operation.

Photo 14 shows the condition of the right 2nd row tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 7mm. The tyres were also observed to be sufficiently inflated for vehicular operation.

Photo 15 shows the condition of the right 3rd row tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 8mm. The tyres were also observed to be sufficiently inflated for vehicular operation.

Photo 16 shows the condition of the right 4th row tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 5mm. The tyres were also observed to be sufficiently inflated for vehicular operation.

Photo 17 shows the condition of the rear right tyres of the Motor Trailer, which were observed to be in serviceable condition with remaining tread depth of approximately 8mm. The tyres, which were wrapped around standard alloy wheel rims, were also observed to be sufficiently inflated for vehicular operation

Engine Compartment & Operating Fluids

9. Upon examination of the engine compartment of the Motor Trailer, we had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, 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.

10. 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 Tipper Truck.

11. Our subsequent checks on the underside of the Motor Trailer also revealed no fluid stain. Visually, the various undercarriage components of the Motor Trailer were all observed to be intact and without any visible damage. See photo 18 – 21 below.

Photo 18 shows a general view of the engine compartment area from the front bonnet of the Motor Trailer. It was observed to be intact and unaffected by the collision. There was also no sign(s) or indication(s) of fluid leak and/or fluid stain found.

Photo 19 shows a general view of the engine area from under the front cabin of the Motor Trailer. The engine assembly and transmission assembly of the Motor Trailer were both observed to be intact and unaffected by the collision. There was also no sign(s) or indication(s) of fluid leak and/or fluid stain found.

Photo 20 shows a general view of the engine area from the underside of the Motor Trailer. The engine assembly and transmission assembly of the Motor Trailer were both observed to be intact and unaffected by the collision. There was also no sign(s) or indication(s) of fluid leak and/or fluid stain found.

Photo 21 shows the engine dip stick at the time of our inspection. The engine fluid was observed to be of sufficient level and without any visible contamination for operational purposes.

Steering System & Braking System

12. The mechanical components of the Motor Trailer's steering system were all found to be visually intact and undamaged. The steering shaft and steering rack of the Motor Trailer 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.

13. Static test on the steering system of the Motor Trailer also revealed no abnormality to the steering system. We did not experience any abnormal free play and/or other resistance when turning the steering wheel left and right to full lock positions. It is likely that the steering system of the Motor Trailer was in serviceable condition at the material time of accident since its mechanical components were all found to be generally intact and securely fitted. See photo 22 – 25 below.

Photo 22 shows some of the mechanical components (arrowed) of the Motor Trailer's steering system. Our visual checks on the various mechanical components of the steering system revealed all to be intact and in good condition. The steering system of the Motor Trailer is hence likely to be in serviceable condition at the time of accident.

Photo 23 shows the undercarriage components at the front right wheel of the Motor Trailer. The various undercarriage components of the Motor Trailer were all observed to be intact and without any visible damage. This had included the steering rack and steering linkages (arrowed) of the Motor Trailer.

Photo 24 shows the undercarriage components at the front left wheel of the Motor Trailer. The various undercarriage components of the Motor Trailer were all observed to be intact and without any visible damage. This had included the steering rack (arrowed) of the Motor Trailer, which was observed to be securely attached to the front left wheel and front right wheel.

Photo 25 shows that we did not experience any abnormal free play and/or other resistance when turning the steering wheel left and right to full lock positions.

14. The braking system of the Motor Trailer 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.

15. 2 numbers of air tanks in particular were observed to be also in serviceable condition. Air built up to an acceptable level which is level 9.1 (On the display panel) for both air tanks for operational ready status after a warming up session prior the operational test. Both air tanks were monitored for about 10 minutes for an observation of any abnormalities. Both air tanks pressure found to be normal without any drop in pressure during the course of our monitoring session. This would indicate that there was no leak of air pressure from the air braking system of the Motor Trailer. See photo 26 below.

Photo 26 shows the compressed air meters for braking system. This shows that there's no dropped of pressure. Hence, revealed that no air leakage at the time of our inspection.

16. A static brake test(s) was able to be carried at time of our inspection. This is to determine on whether there was any leakage of compressed air that could have affected the braking efficiency of the Motor Trailer. The air pipes, air tanks and connecting valves had all appeared to be in good general condition and securely fitted upon our static brake test. The static brake test was of a satisfactory result. Its brake pedal responded by releasing excessive compressed air upon stepping on the brake pedal suggesting that it's braking system was in serviceable condition at the material time of accident. See photo 27 - 30 below.

Photo 27 shows the air tanks, valves, pipes and hoses, which are some of the components for the full air-assisted braking system of the Motor Trailer. These components were mainly located at the underside of the Motor Trailer and were unaffected by the accident.

Photo 28 shows the valves, brake hoses and pipes, which are some of the components for the air-assisted braking system of the Motor Trailer. These components were observed to be unaffected by the accident. Our visual examination of these parts revealed all to be in good general condition and securely fitted.

Photo 29 shows the brake hoses leading to the rear left wheel and rear right wheel of the Motor Trailer. At the time of our inspection, the various mechanical components of the air-assisted hydraulic braking system of the Motor Trailer were all found to be in good general condition and securely fitted.

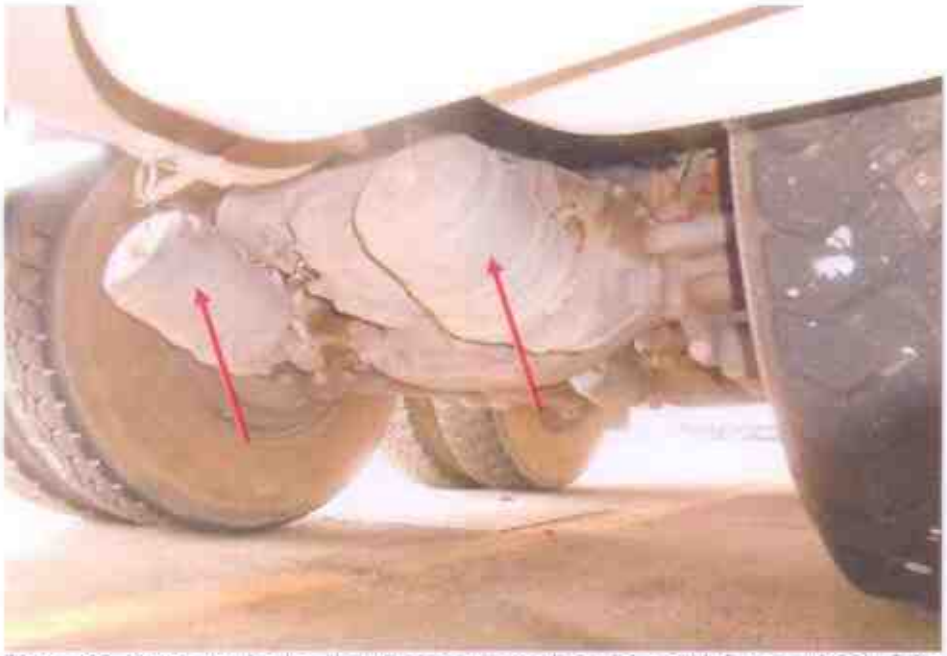


Photo 30 shows the brake air cylinder (arrowed) at the rear left rear wheel of the Motor Trailer. Such air cylinder, which is amongst the various components for the air-assisted hydraulic braking system, can be found attached to all the front wheels and all the rear wheels of the Motor Trailer. Upon our checks, we had found all the brake air cylinders to be undamaged and securely fitted to all the wheels of the Motor Trailer.

Electronic Safety / Warning Indicator

17. The Motor Trailer's automatic self-test of the functionality of its various electronic operating systems like the Battery checked indicator, engine checked indicator, Anti-Locking Braking System ABS indicator, handbrake indicator, caution light indicator & Parking light indicator. During cranking of the engine had indicated that these systems 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 31 & 32 below.

Photo 31 shows the warning indicator was observed to be lighted up before cranking of the engine.

Photo 32 shows some warning indicators were observed to be disappearing during the idling speed of the engine.

Operational Behaviour of the Motor Trailer

18. During the operational test, the transmission system of the Motor Trailer was able to be shifted to drive mode and reverse mode without any difficulty. There were no abnormal sounds heard and/or abnormal behaviour of the Motor Trailer's engine system. The braking system was also found to be in working condition.

Conclusion

19. From our physical inspection of the Motor Trailer, it appears that its engine system, transmission system, steering system and braking system were all in serviceable condition. We did not find any evidence(s) to suggest that there was possible mechanical failure to the Motor Trailer that may have caused and/or contributed to the accident.

20. A short operational test of the Motor Trailer, which we had conducted, did not produce any sign(s) or symptom(s) to suggest that there was any abnormality to its engine system, its transmission system and braking system.

21. The 18 tyres fitted on the Motor Trailer 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 18 tyres. The 18 tyres were sufficiently inflated for vehicular operation with remaining tread depth of approximately 5mm to 9mm.

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