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/47263/2021 22nd November 2021
Our Ref : CI/TPD21011277/P

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

MECHANICAL INSPECTION REPORT OF TAXI SHA 8810B

1. I refer to your request on 29th October 2021 to conduct a physical inspection of a Taxi bearing registration number SHA 8810B (herein referred to as "**Taxi**"), which was involved in a road traffic accident on 4th October 2021.

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

3. Following the request, I had carried out a physical inspection of the Taxi on 22nd November 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.

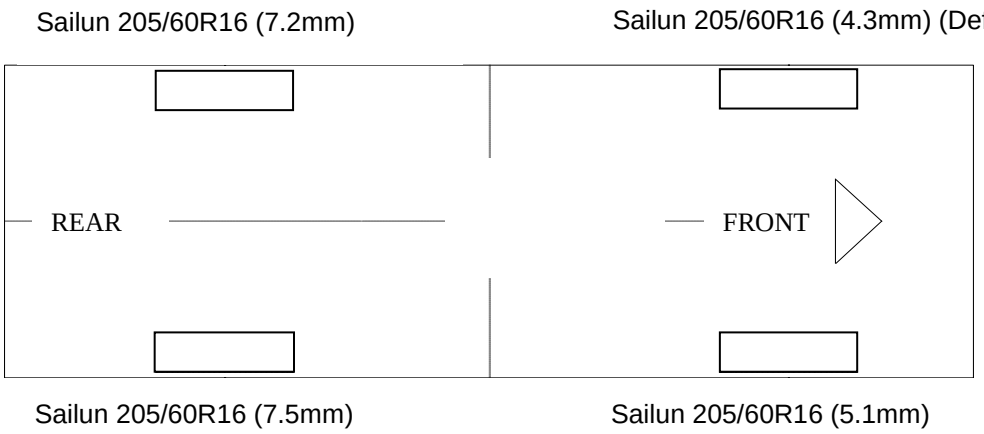
General Condition

4. The mileage of the Taxi at the time of my inspection was 583,502km.

5. The Taxi was observed to sustained damage at its front portion. Its front bonnet and front bumper were damaged at the time of my inspection as a result of the accident.

Tyres and Wheel Rims

6. The front left tyre was observed to be deflated as a result of the accident. The other 3 tyres of the Taxi 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 4 tyres. The tyre brand, tyre size and remaining tread depth of the 4 tyres of the Taxi were recorded as follows:-



7. The front left tyre was observed to be deflated as a result of the accident. The other 3 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 11 below.

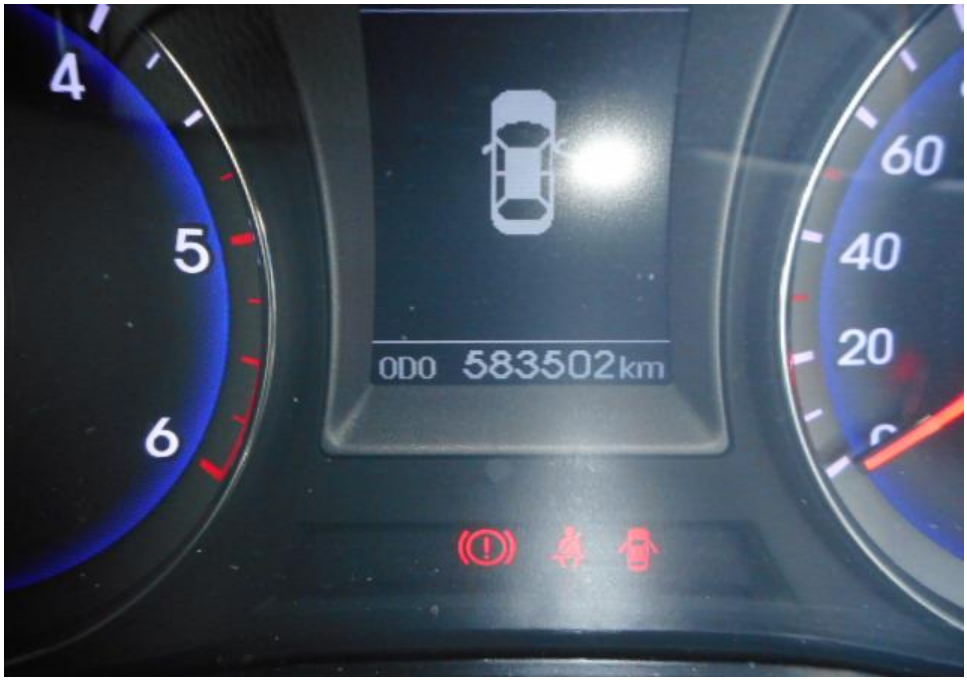


Photo 1 shows a general view of the instrument cluster of the Taxi at the time of my inspection. The mileage of the Taxi was 583,502 km

Photo 2 shows a general view of the Taxi's rear portion at the time of my inspection. The Taxi was observed to be intact and unaffected by the accident.

Photo 3 shows a general view of the Taxi's front portion at the time of my inspection. It appeared to have sustained damage at its front portion. Its front bonnet and front bumper were damaged at the time of my inspection as a result of the accident.

Photo 4 shows a close up view of the Taxi's front portion at the time of my inspection. It appeared to have sustained damage at its front portion. Its front bonnet (circled) were damaged at the time of my inspection as a result of the accident.

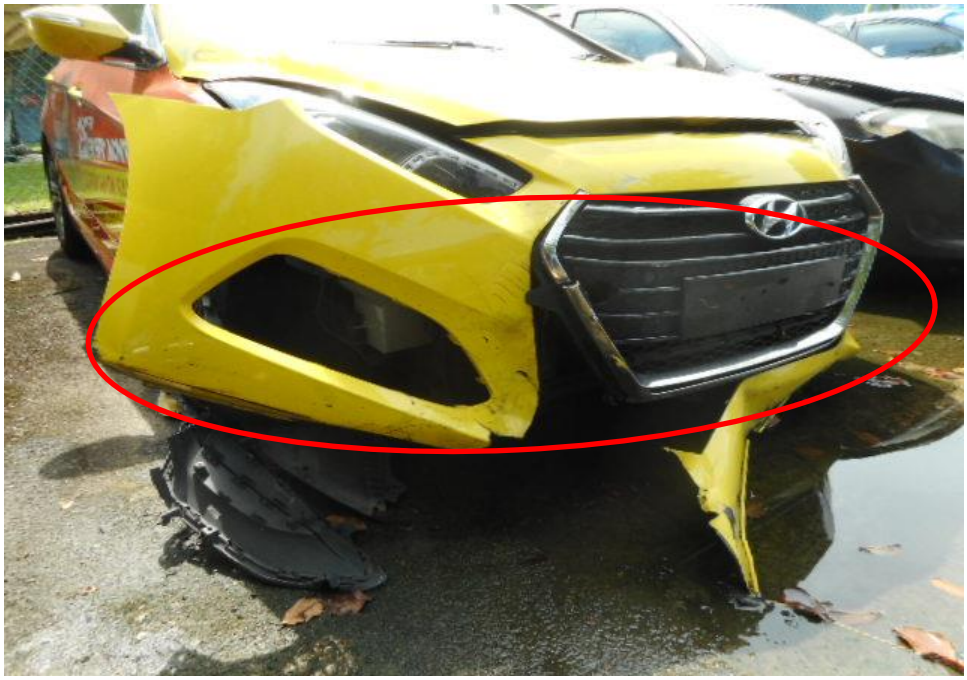


Photo 5 shows a close up view of the Taxi's front portion at the time of my inspection. It appeared to have sustained damage at its front portion. Its front bumper (circled) were damaged at the time of my inspection as a result of the accident.

Photo 6 shows a general view of the right body of the Taxi at the time of my inspection. The Taxi was observed to be intact and unaffected by the accident.

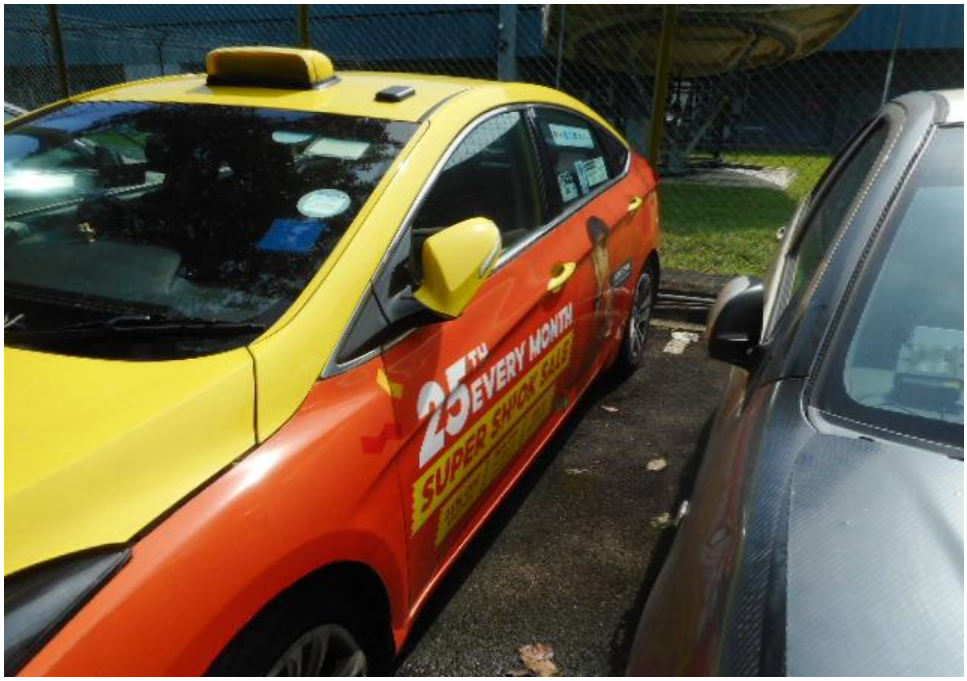


Photo 7 shows a general view of the left body of the Taxi at the time of my inspection. The Taxi was observed to be intact and unaffected by the accident.

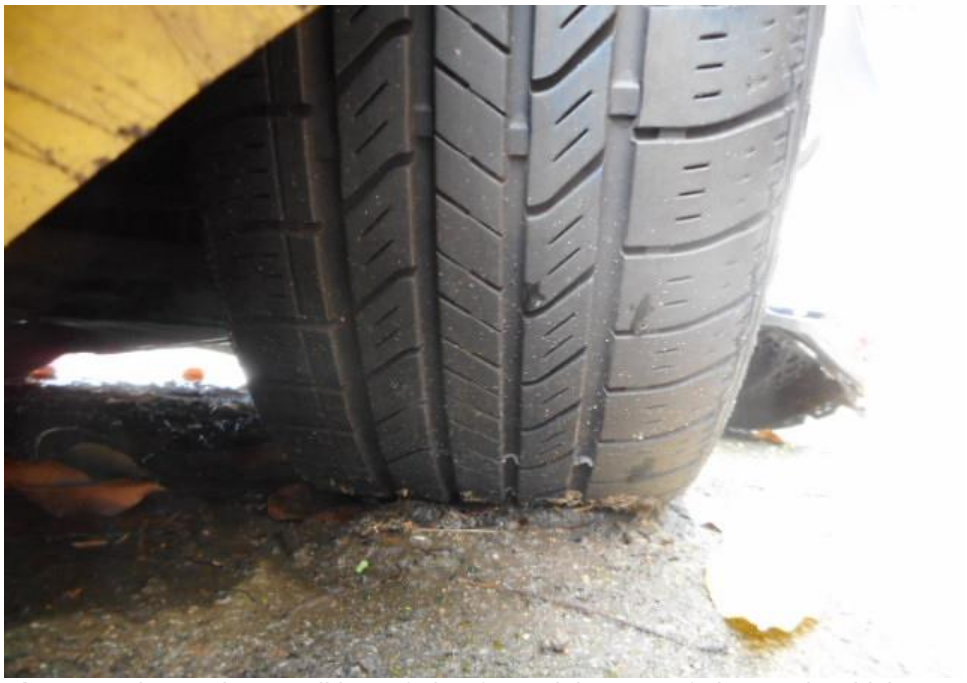


Photo 8 shows the condition of the front right tyre of the Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 5.1mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation. There was no tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 4 tyres that were fitted on the Taxi.

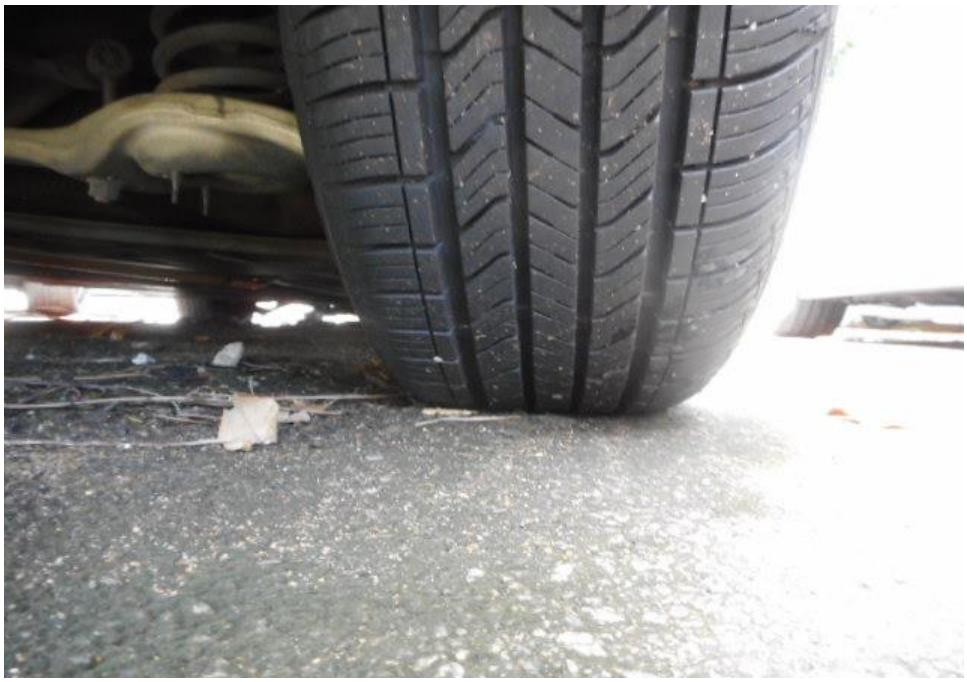


Photo 9 shows the condition of the rear right tyre of the Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 7.5mm. The tyre, which was wrapped around standard steel wheel rim, it was observed to be sufficiently inflated for vehicular operation.

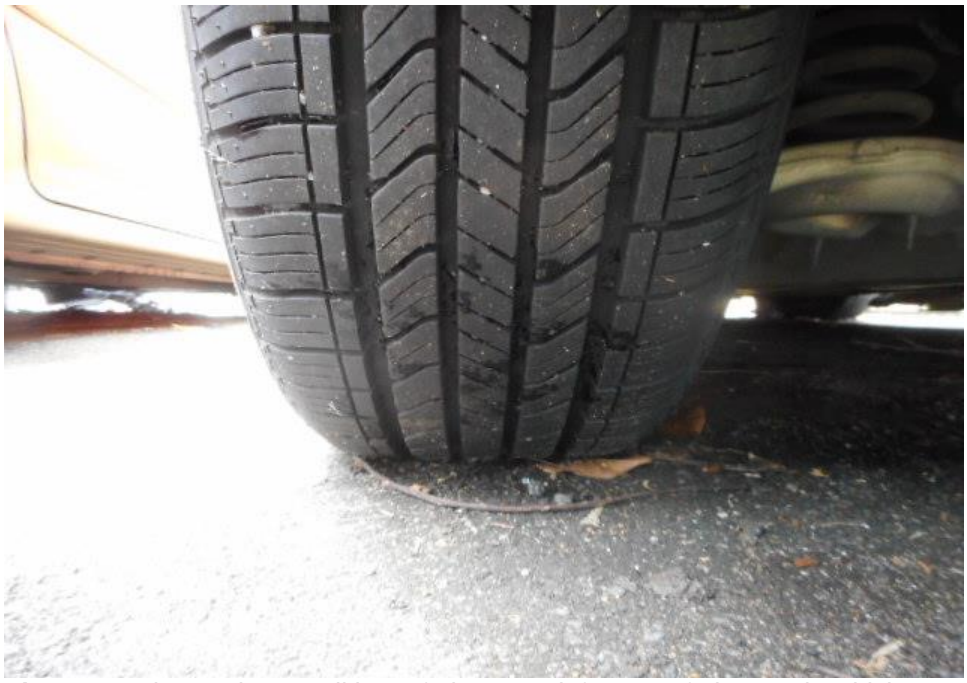


Photo 10 shows the condition of the rear left tyre of the Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 7.2mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation.

Photo 11 shows the condition of the front left tyre of the Taxi, which were observed to be in serviceable condition with remaining, tread depth of approximately 4.3mm. 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 4 tyres that were fitted on the Taxi.

Engine Compartment & Operating Fluids

8. Upon examination of the Taxi's engine compartment, I had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, engine coolant and engine oil 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 Taxi.

10. My subsequent checks on the underside of the Taxi also revealed no fluid stain. Visually, the various undercarriage components of the Taxi were all observed to be intact and without any visible damage. See photo 12 – 16 below.

Photo 12 shows a general view of the Taxi's engine compartment, which was accessed by lifting the front cabin of the Taxi. 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

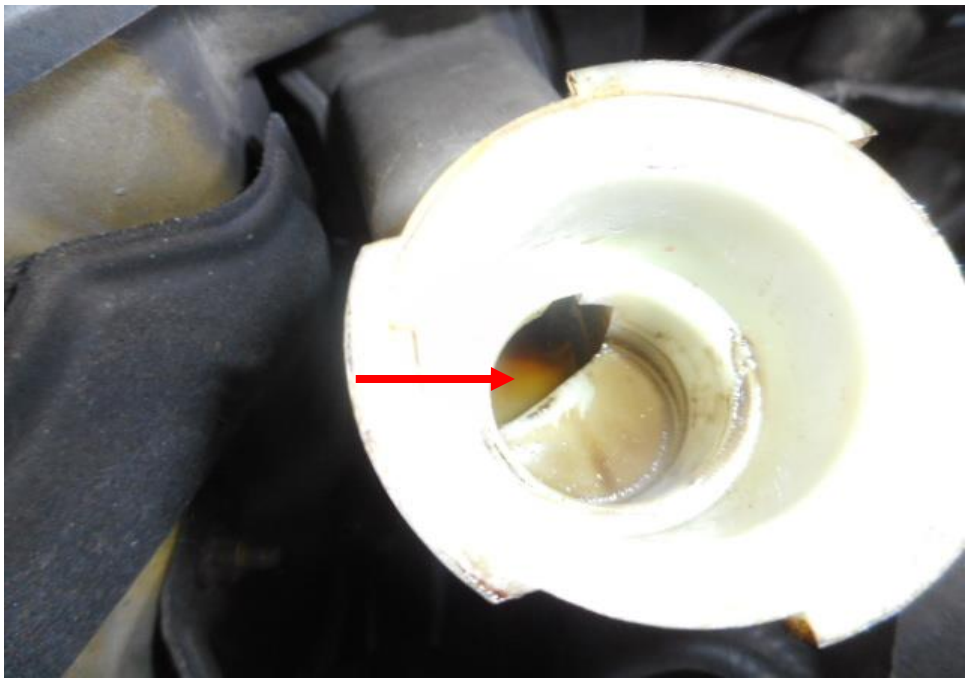


Photo 13 shows the brake fluid reservoir of the Taxi at the time of my inspection. The brake fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 14 shows the engine coolant reservoir of the Taxi 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 the engine oil dip stick of the Taxi at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.

Photo 16 shows the undercarriage of the Taxi, at the area where the engine housing and transmission housing are located. I did not find any sign(s) or indication(s) of fluid leak and/or fluid stain(s) on the underside of the Taxi.

Steering System & Braking System

11. Static brake tests conducted on the Taxi 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 Taxi. The braking system of the Taxi was likely to be in serviceable condition at the material time. This was 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.

12. Static test on the steering system of the Taxi 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 steering rack and pinion, tie rods, tie rod ends and ball joints revealed that these components were all generally in good condition. See photo 17 - 23 below.

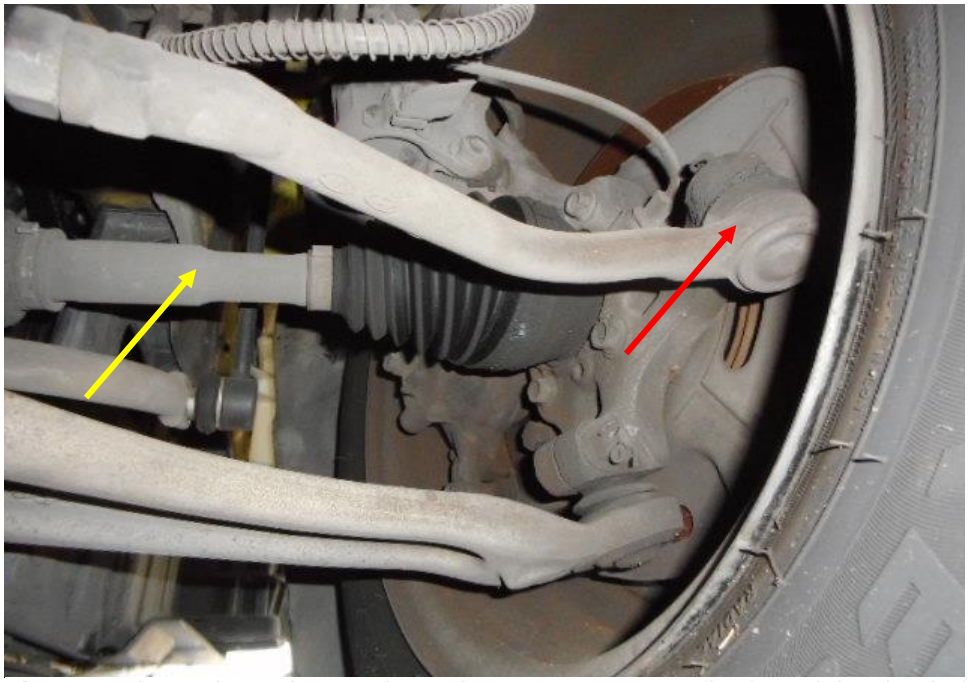


Photo 17 shows the various undercarriage components at the front right wheel of the Taxi, in particular the steering tie rod end (red arrow) and its driveshaft (yellow arrow). The various steering components were all found to be intact, suggesting that the steering system of the Taxi was likely to be in serviceable condition at the material time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

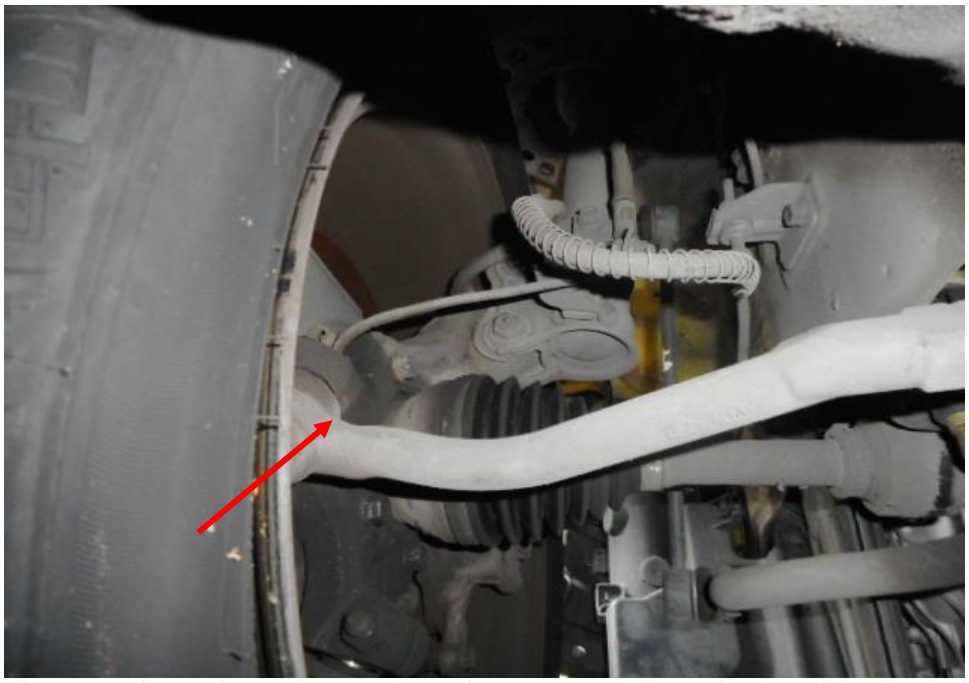


Photo 18 shows the various undercarriage components at the front left wheel of the Taxi, in particular the steering tie rod end (arrowed). The various undercarriage components of the Taxi were all found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

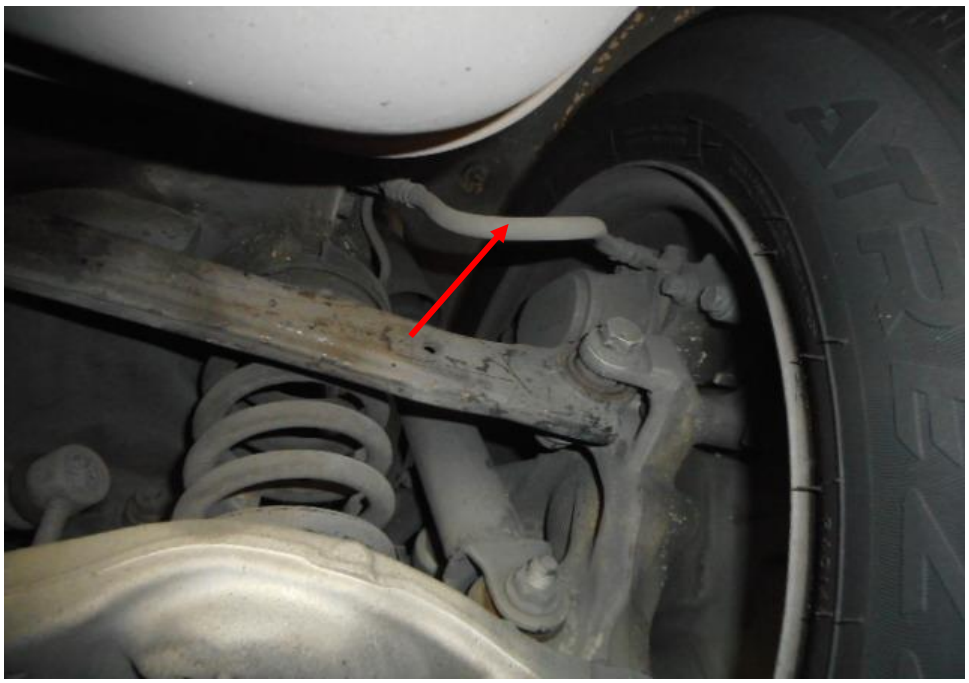


Photo 19 shows the brake pipe (arrowed) at the rear right wheel of the Taxi. I did not observe any leakage of brake fluid at the time of my inspection of the Taxi. My static tests of the Taxi's braking system, along with my visual examination of the various mechanical components in the braking system,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

Photo 20 shows the front right wheel of the Taxi 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 the left and right. This would suggest that the steering system of the Taxi was likely to be in serviceable condition at the material time of accident.

Photo 21 shows the brake pipe (arrowed) at the rear left wheel of the Taxi. I did not observe any leakage of brake fluid at the time of my inspection of the Taxi. My static tests of the Taxi'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 Taxi was likely to be in serviceable condition at the material time of accident.

Photo 22 shows the brake hose/pipe (arrowed) at the front right wheel of the Taxi. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

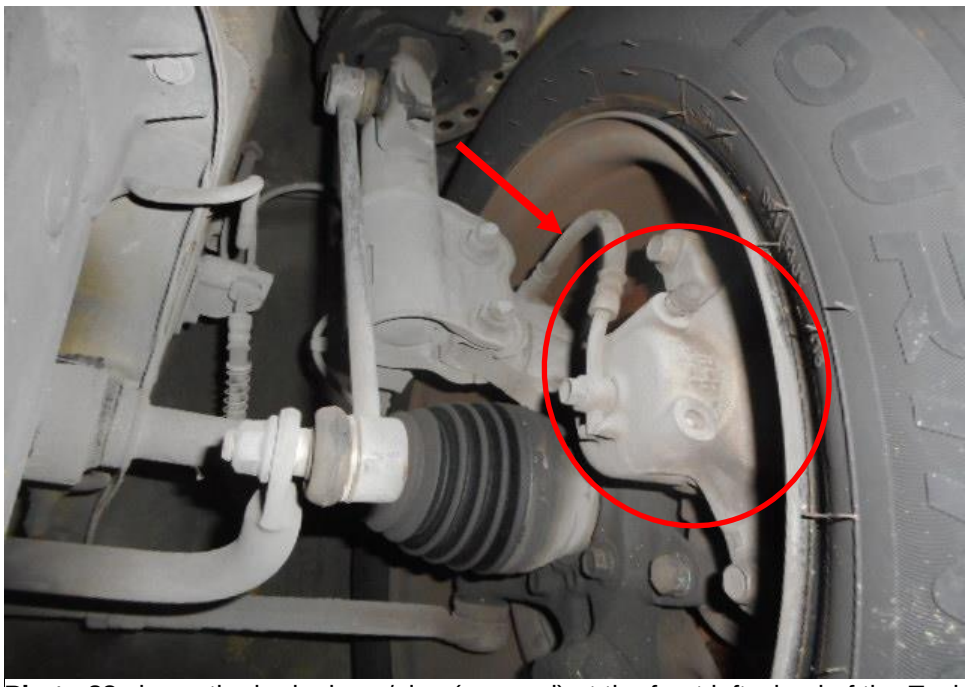


Photo 23 shows the brake hose/pipe (arrowed) at the front left wheel of the Taxi. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

Electronic Safety / Warning Indicators

13. The Taxi 's automatic self-test of the functionality of its electronic operating systems like the Anti-Lock Brake System (ABS) and Electric Power Steering System (EPS), Supplemental Restraint System (SRS) and Traction Control (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 24 & 25 below.

Photo 24 shows the warning light for Anti-Lock Brake System (ABS) and Power Steering System (EPS), Supplemental Restraint System (SRS) and Traction Control (TC) (arrowed) appearing on the instrument panel of the Taxi during the self-test of its various electronic operating systems when its engine was cranked.

Photo 25 shows no warning lights illuminated on the instrument panel of the Taxi after the engine was cranked. This would suggest that there was no abnormality to the electronic operating system of the Taxi, like the ABS, EPS, SRS, and TC etc.

Seat Belts

14. The Front right and front left seat belts of the "Taxi" 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 Taxi

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

16. During the operational test, the transmission system of the Taxi was able to be shifted to drive mode and reverse mode without any difficulty. There was no abnormal sounds heard and/or abnormal behaviour of the Taxi'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 Taxi was able to slow down and come to a complete stop upon depressing of the brake pedal.(Refer to photo 2 & 20)

Conclusion

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

18. A short operational test of the Taxi, which I 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.

19. The front left tyre was deflated as a result of the accident. However, the other 3 tyres fitted on the Taxi 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 4 tyres. The 3 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 4.3mm – 7.5mm.

Sherwin Beh
Technical Investigator

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