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

You're Ref: TP TP/12972/2023 17th July 2023
Our Ref: CI/TPD23006801/P

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

MECHANICAL INSPECTION REPORT OF MOTOR TAXI SHC 669K

1. I refer to your request on 10th June 2023 to conduct a physical inspection of a Motor Taxi bearing registration number SHC 669K (herein referred to as "**Motor Taxi**"), which was involved in a road traffic accident on 9th May 2023.

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

3. Following the request, I had carried out a physical inspection of the Motor Taxi on 17th July 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.

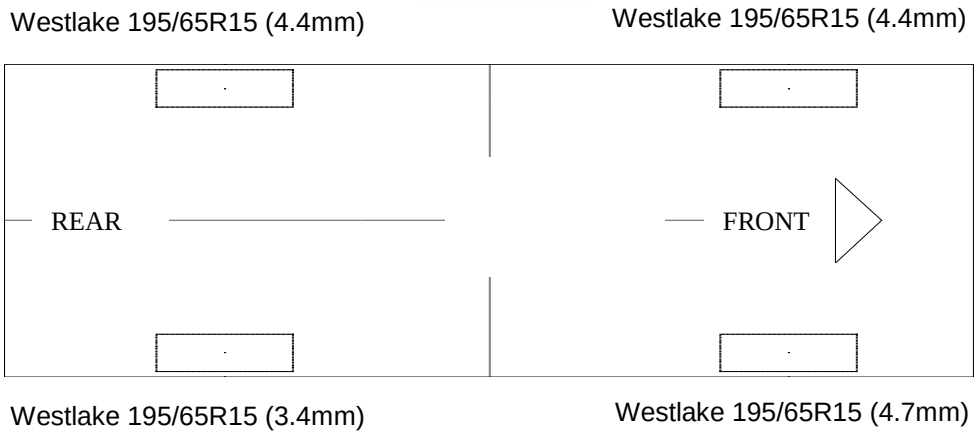
General Condition

4. The mileage of the Motor Taxi at the time of my inspection was 605,139km.

5. The Motor Taxi was observed to have sustained damage at its front portion. Its front bonnet, front bumper, front left fender and front reinforcement was amongst the body parts and various engine components were also damaged as a result of the accident.

Tyres and Wheel Rims

6. The condition of the Motor Car's 4 tyres was observed 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 4 tyres were also observed to be sufficiently inflated for vehicular operation. The tyre brand, tyre size and remaining tread depth of the 4 tyres were recorded as follows:-



7. The 4 tyres were observed to be wrapped around standard alloy wheel rims that were found to be without any damage. See photo 1 – 14 below.

Photo 1 shows the mileage of the Motor Taxi at the time of my inspection. The mileage observed was 605,139km.

Photo 2 shows a general view of the Motor Taxi's front body at the time of my inspection. The front portion of the Motor Taxi was observed to have sustained damage. Its front windscreen, front bonnet, front bumper, front right fender and front reinforcement was amongst the body parts and various engine components were also damaged as a result of the accident.

Photo 3 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front bonnet (circled) as a result of the accident.

Photo 4 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front left headlamp (circled) and front left fender as a result of the accident.

Photo 5 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front bumper (circled) and front left fender (arrowed) as a result of the accident.

Photo 6 shows the close up view of the Motor Taxi's front body at the time of my inspection. The Motor Taxi was observed to have sustained damage at its front reinforcement (circled) as a result of the accident.

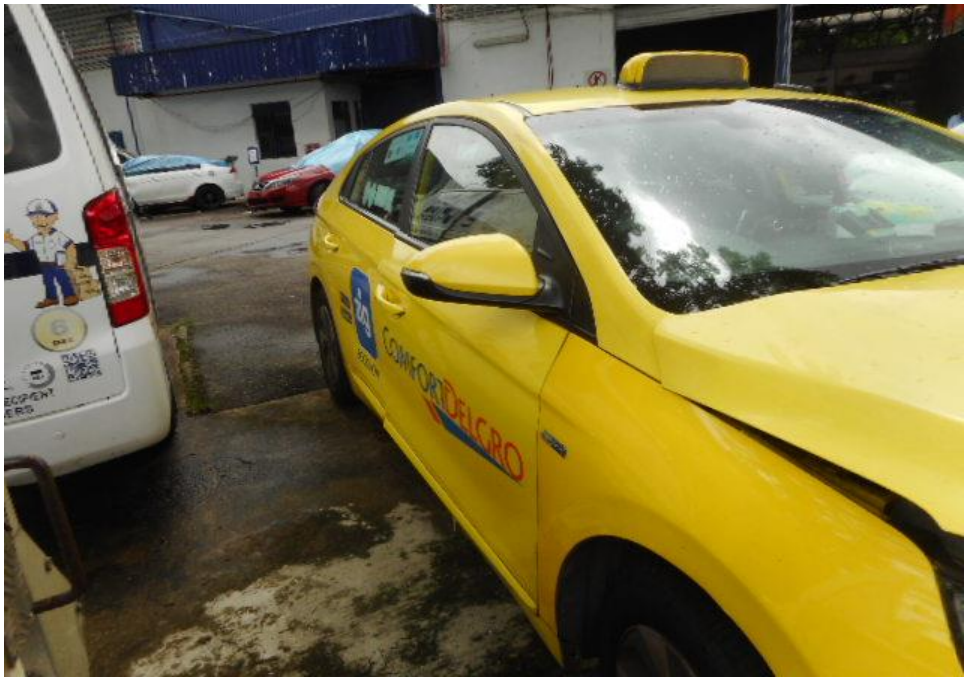


Photo 7 shows a general view of the Motor Taxi's right body at the time of my inspection. The right portion of the Motor Taxi was observed to have been unaffected by the accident.

Photo 8 shows a general view of the Motor Taxi's left body at the time of my inspection. The left portion of the Motor Taxi was observed to have been unaffected by the accident.

Photo 9 shows the general view of the Motor Taxi's rear body at the time of my inspection. The Motor Taxi rear was observed to be unaffected by the accident.

Photo 10 shows the condition of the front right tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 4.7mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).

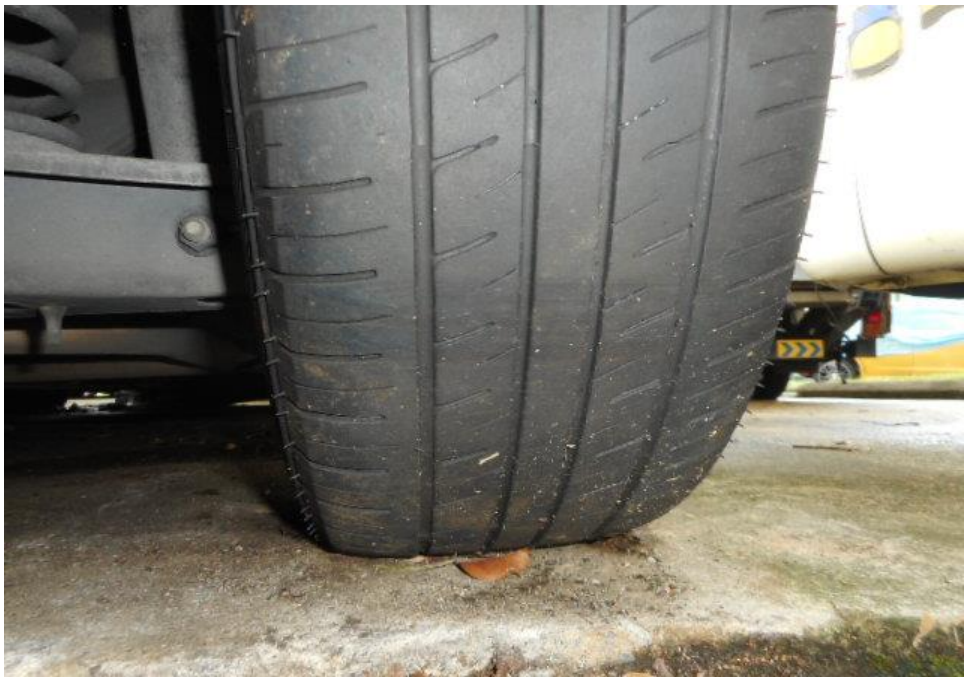


Photo 11 shows the condition of the rear right tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 3.4mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).

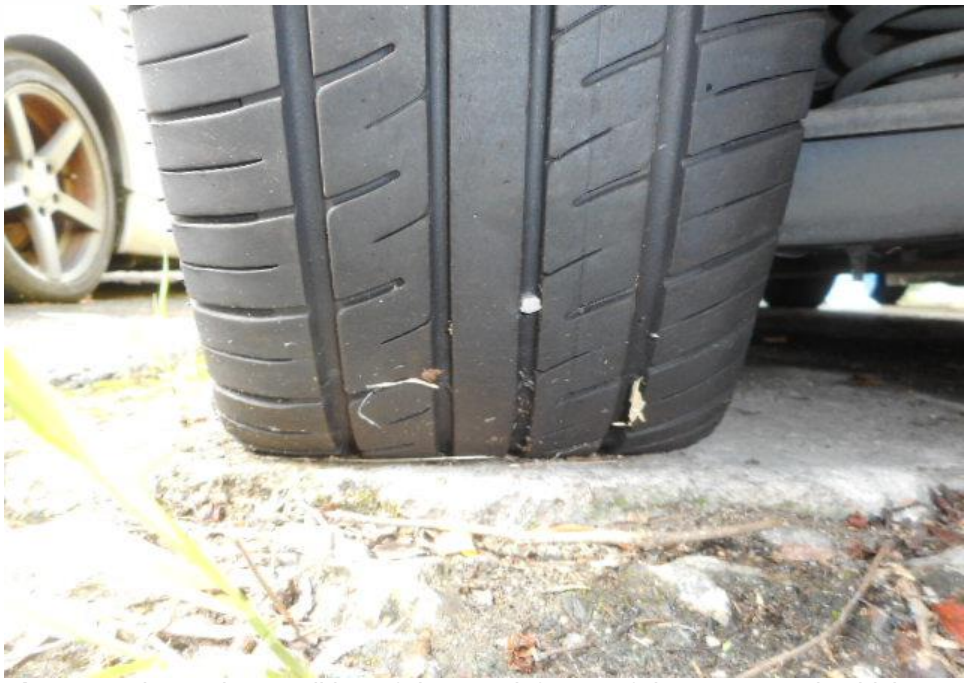


Photo 12 shows the condition of the rear left tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 4.4mm. The tyre, which was wrapped around steel wheel rim, was also observed to be sufficiently inflated for vehicular operation. The 4 tyres of the Motor Taxi were wrapped around standard steel wheel rims.

Photo 13 shows the condition of the front left tyre of the Motor Taxi, which was observed to be in serviceable condition with remaining tread depth of approximately 4.4mm. The tyre was also observed to be sufficiently inflated for vehicular operation with no tear, cut or burst mark(s).

Photo 14 shows the deployment of the Supplemental Restraint System (SRS) airbag in the Motor Taxi as a result of the accident.

Engine Compartment & Operating Fluids

8. Upon examination of the engine compartment of the Motor Taxi, the brake fluid and engine oil were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids. However, the engine coolant was observed to be insufficient as the engine coolant radiator was damaged by the accident.

9. 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 Taxi. The engine air filter box, throttle body, engine cooling fan and electrical wirings was observed to be damaged as a result of the induce impact as a result of the accident.

10. My subsequent checks on the underside of the Motor Taxi also revealed no sign(s) or indication(s) of fluid leak and/or fluid stain(s). Visually, the various undercarriage components of the Motor Taxi were all observed to be intact and without any visible damage. See photo 15 – 24 below.

Photo 15 shows a general view of the Motor Taxi's engine compartment, I had observed that the engine air filter box, throttle body, engine cooling fan and electrical wirings was observed to be damaged as a result of the induce impact as a result of the accident.

Photo 16 shows the close up view of the engine compartment of the Motor Taxi at the time of my inspection. The engine air filter box (circled) of the Motor Taxi was damaged as a result of the accident.

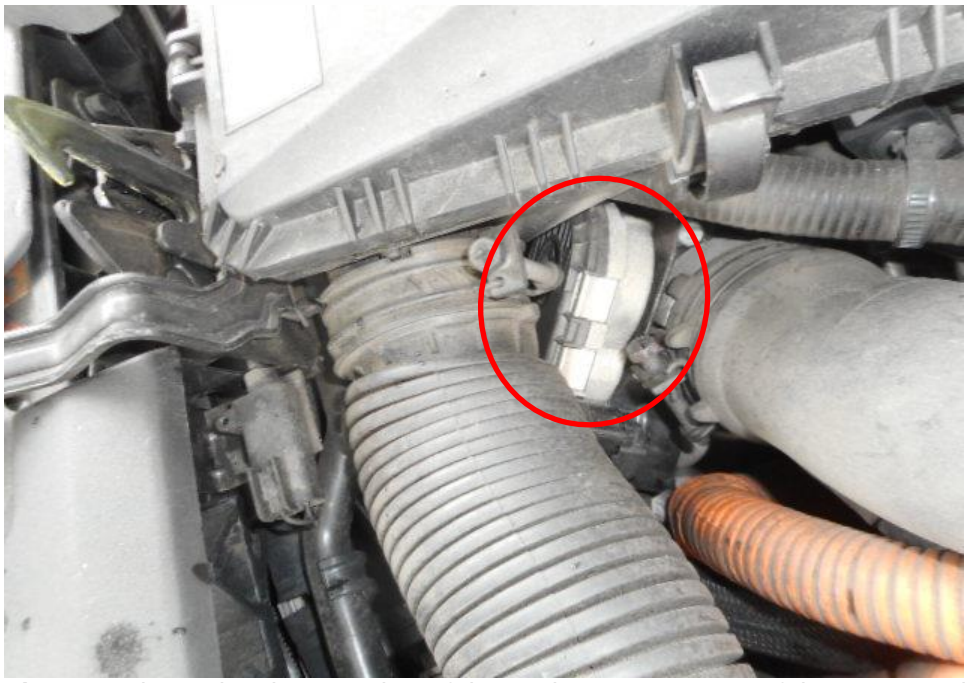


Photo 17 shows the close up view of the engine compartment of the Motor Taxi at the time of my inspection. The engine throttle body (circled) of the Motor Taxi was damaged as a result of the accident.

Photo 18 shows the close up view of the engine compartment of the Motor Taxi at the time of my inspection. The electrical wirings (circled) of the Motor Taxi was damaged as a result of the accident.

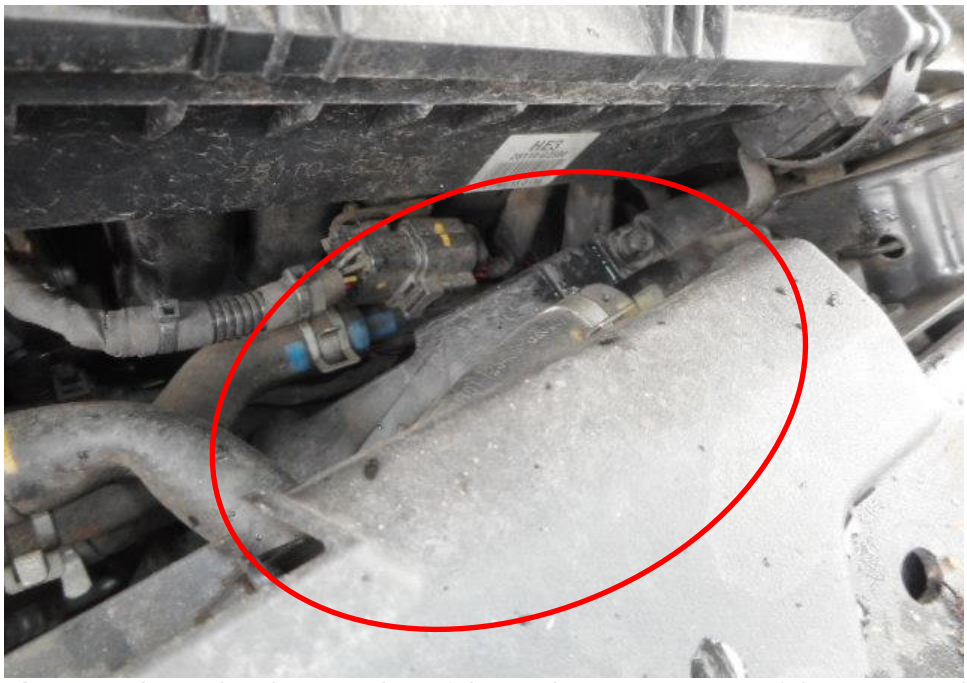


Photo 19 shows the close up view of the engine compartment of the Motor Taxi at the time of my inspection. The electrical wirings (circled) of the Motor Taxi was damaged as a result of the accident.

Photo 20 shows the close up view of the engine coolant radiator of the Motor Taxi at the time of my inspection. The engine coolant radiator (circled) of the Motor Taxi was damaged as a result of the accident.

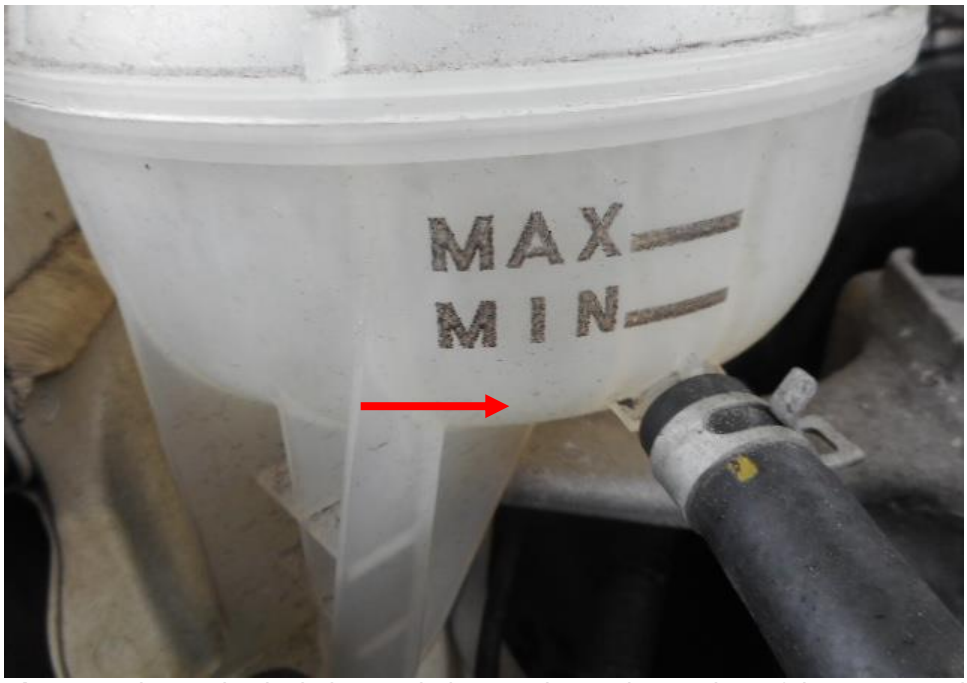


Photo 21 shows checks being carried out to the engine coolant of the Motor Taxi at the time of my inspection. The engine coolant was observed to be of insufficient level (arrowed) as the damage to the engine coolant hose has caused a leakage.

Photo 22 shows the brake fluid reservoir of the Motor Taxi at the time of my inspection. The brake fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 23 shows the engine oil dip stick of the Motor Taxi at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.

Photo 24 shows the undercarriage of the Motor 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 Motor Taxi.

Braking System & Steering System

11. For this inspection, I was not able to conduct any static brake and steering tests on the steering and braking system of the Motor Taxi due to the Motor Taxi running on electric power steering (EPS) and braking system which requires the Motor Taxi to be started however, the engine was unable to be started up despite multiple attempts although there was battery power in the Motor Taxi.

12. My visual examination of the various steering and braking components which had included the rack and pinion, tie rods, tie rod ends and ball joints, brake hoses and brake pipes had revealed that these components were all generally intact. See photo 25 - 29 below.

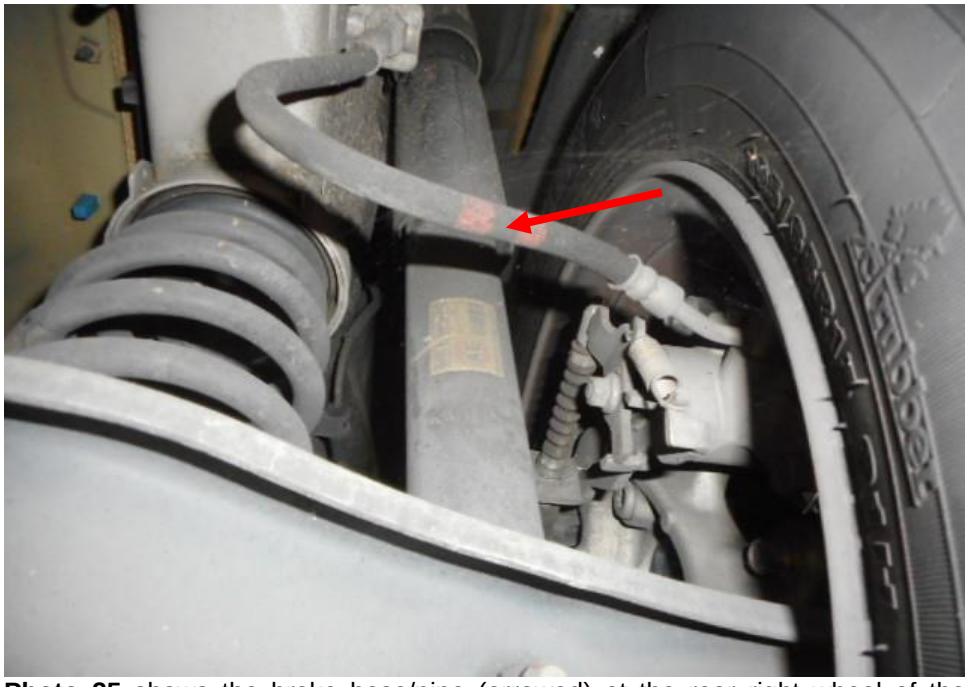


Photo 25 shows the brake hose/pipe (arrowed) at the rear right wheel of the Motor Taxi. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the drum brake, brake booster, brake pedal etc. had revealed all to be intact and without visible damage.

Photo 26 shows the brake hose/pipe (arrowed) at the rear left wheel of the Motor Taxi. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Taxi. The undercarriage components of the Motor Taxi were also all found to be intact and without any visible damage.

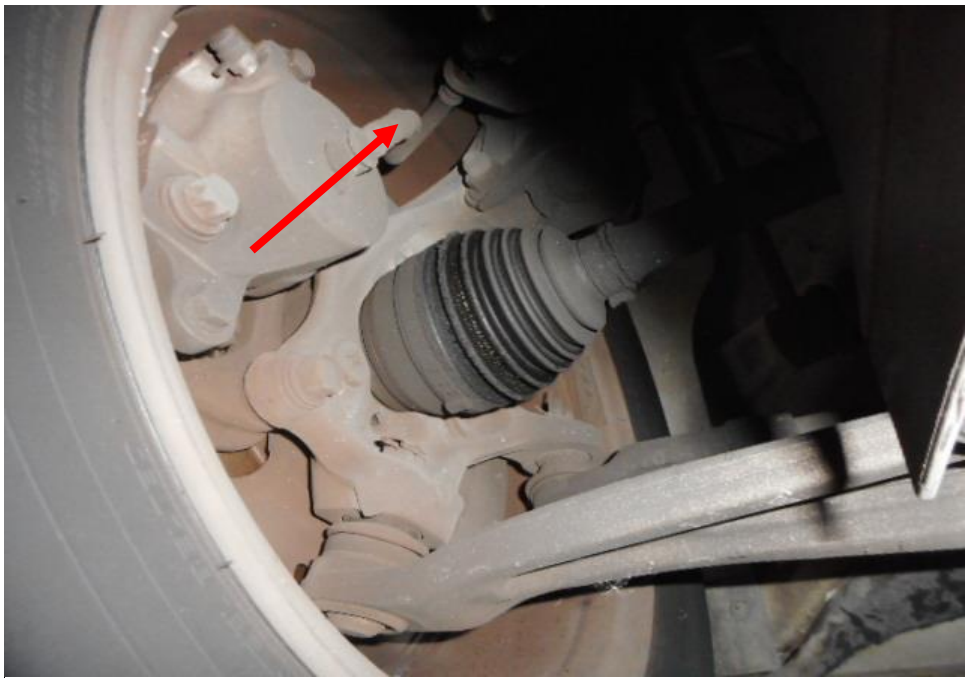


Photo 27 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Taxi. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Taxi. The undercarriage components of the Motor Taxi were also all found to be intact and without any visible damage.

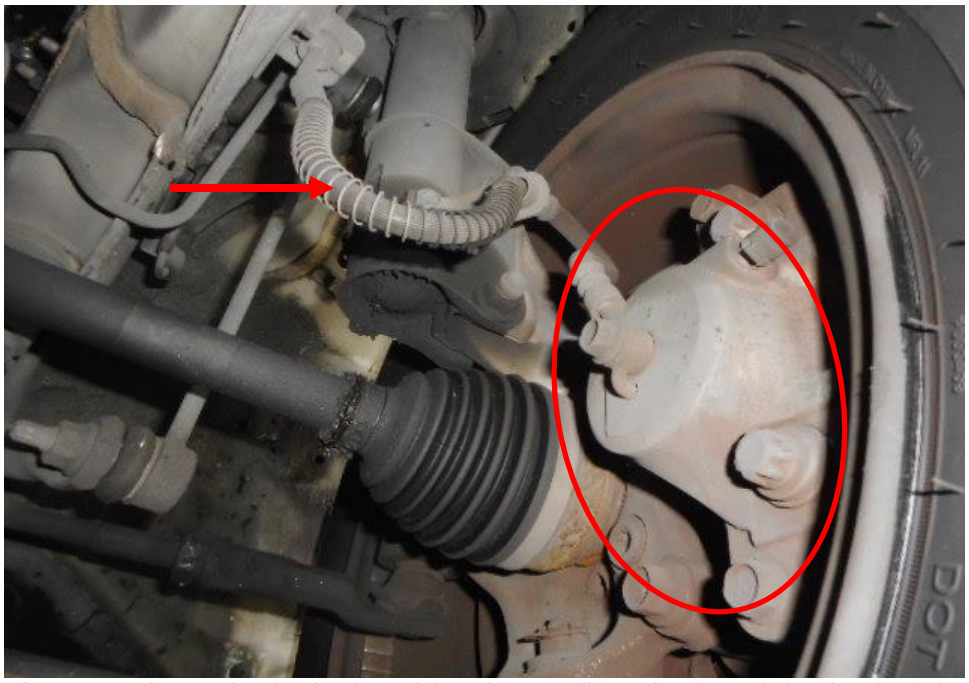


Photo 28 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Taxi. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage.

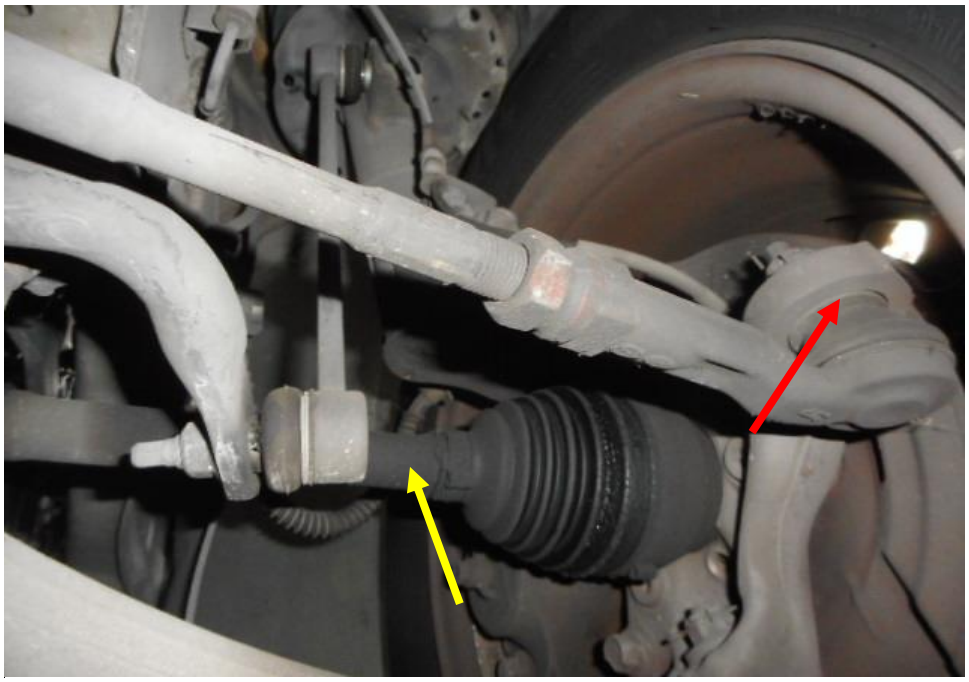


Photo 29 shows the various undercarriage components at the front right wheel of the Motor Taxi, which had included the steering tie rod (arrowed) and drive shaft (yellow arrow). The various undercarriage components of the Motor Taxi were all found to be intact without any visible damage.

Photo 30 shows the various undercarriage components at the front left wheel of the Motor Taxi, which had included the steering tie rod (arrowed). The various undercarriage components of the Motor Taxi were all found to be intact without any visible damage.

Electronic Safety / Warning Indicators

13. The Motor 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) and Traction Control System (TCS) 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. However, the Supplemental Restraint System (SRS), engine light and coolant light remained illuminated as a result of the deployment of the airbag, damages to the electrical throttle body and electrical wirings as well as insufficient coolant in the engine due to the damaged coolant radiator as a result of the accident. See photo 31 & 32 below.

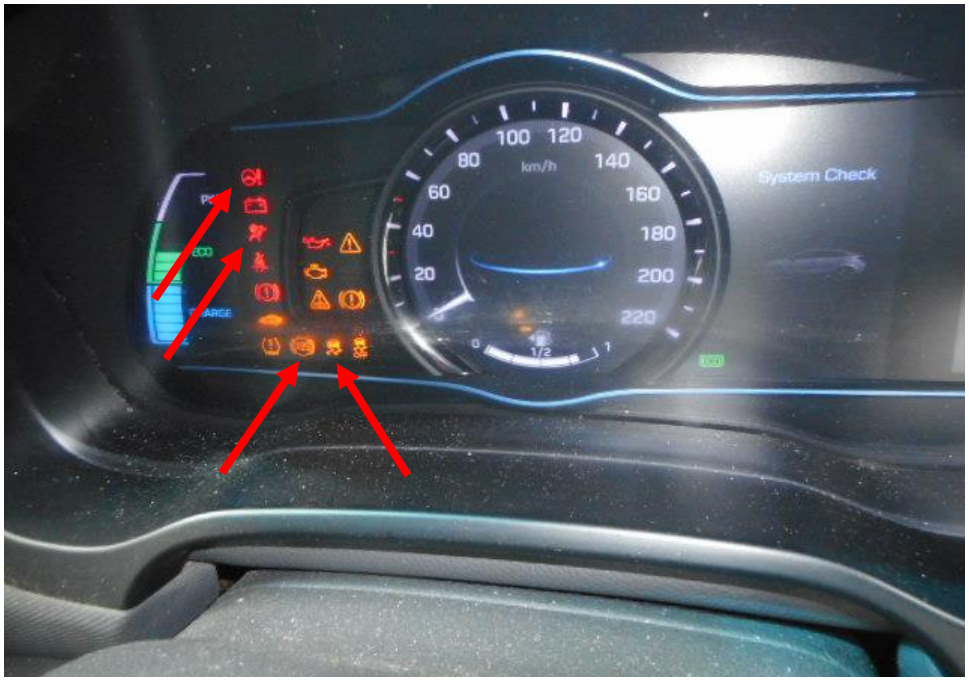


Photo 31 shows the warning light for Anti-Lock Brake System (ABS) and Power Steering System (EPS), Supplemental Restraint System (SRS) and Traction Control (TC) (arrowed) appearing on the instrument panel of the Motor Taxi during the self-test of its various electronic operating systems when its engine was cranked.

Photo 32 shows only the warning lights of the Supplemental Restraint System (SRS), engine light and coolant light remained illuminated on the instrument panel of the Motor Taxi after the engine was cranked and these was a result of the deployment of the airbag, damages to the electrical throttle body and electrical wirings as well as insufficient coolant in the engine due to the damaged coolant radiator as a result of the accident. However, the ABS, EPS and TCS did not light up and this would suggest that there was no abnormality to the electronic operating system of the Motor Taxi, like the ABS, EPS, SRS, and TCs etc.

Seat Belts

14. The right and left seat belt of the “Motor Taxi” was not worn at the material time of accident as the respective pre-tensioners that were fitted at the side of each seat was activated upon the material time. See photo 33 and 34 below.

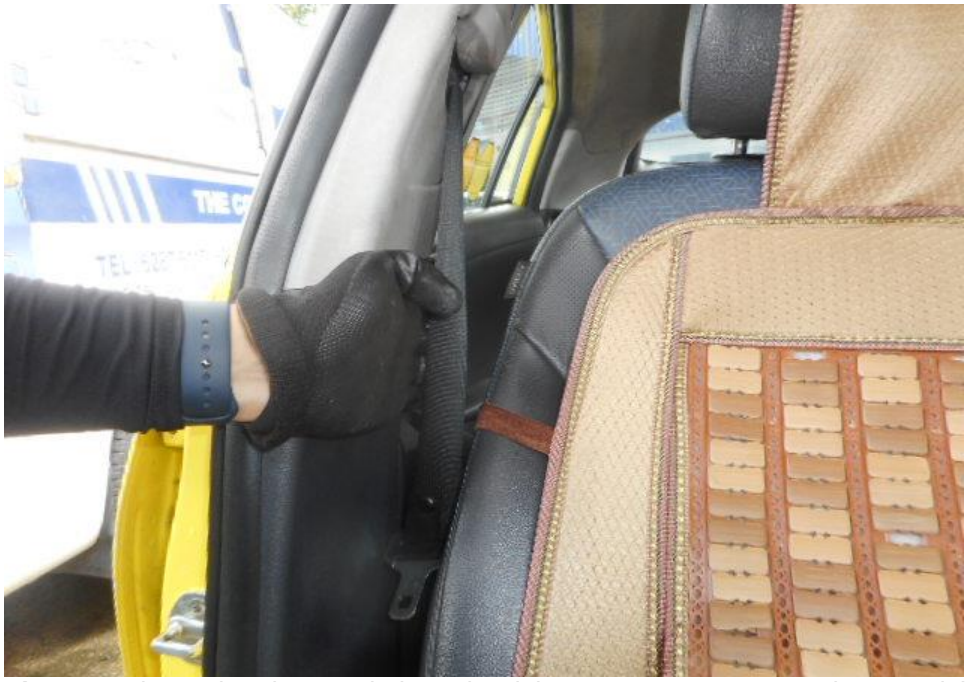


Photo 33 shows that the seat belt on the right seat was not worn at the material time of accident as the safety pre-tensioners was activated at the moment of impact and caused the seat belt to be locked into the last position.

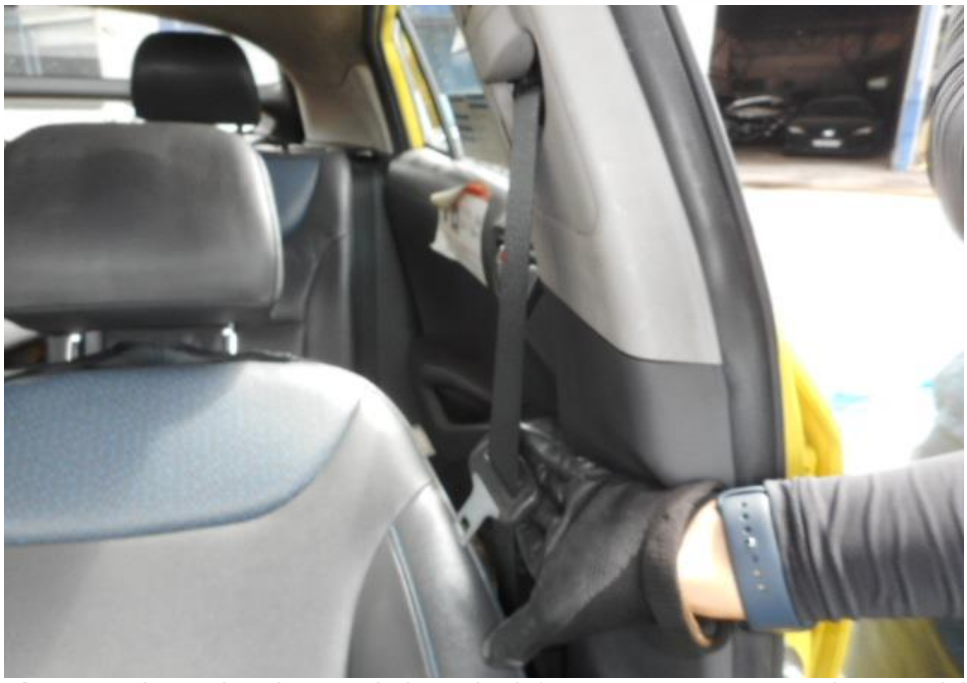


Photo 34 shows that the seat belt on the left seat was not worn at the material time of accident as the safety pre-tensioners was activated at the moment of impact and caused the seat belt to be locked into the last position.

Operational Behaviour of the Motor Taxi

15. A short operational test of the Motor 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 could not be conducted given the extent of damage that it had sustained electrical throttle body, electrical wirings and systems as well as insufficient coolant had prevented me from carrying out any operational test(s).

Conclusion

16. From this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Taxi 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).

17. The 4 tyres of the Motor 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 4 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 3.4mm to 7.4mm.

Sherwin Beh
Technical Investigator

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