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Our Ref : CI/TPD19002519/N

3 May 2019

**General Investigation Team**

Traffic Police Department  
Singapore Police Force  
10 Ubi Avenue 3  
Singapore 408865

**MECHANICAL INSPECTION REPORT OF MOTOR CAR SLW 9010Z**

1. We refer to your request on 1 February 2019 to conduct a physical inspection of a motor car bearing registration number SLW 9010Z (herein referred to as “**Motor Car**”), which was involved in a non- fatal road traffic accident on 22 December 2018.
2. The objective of the inspection is to determine if there was any possible mechanical failure to the Motor Car that may have contributed to the accident.
3. Following the request, we had carried out a physical inspection of the Motor Car on 29 March 2019 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.

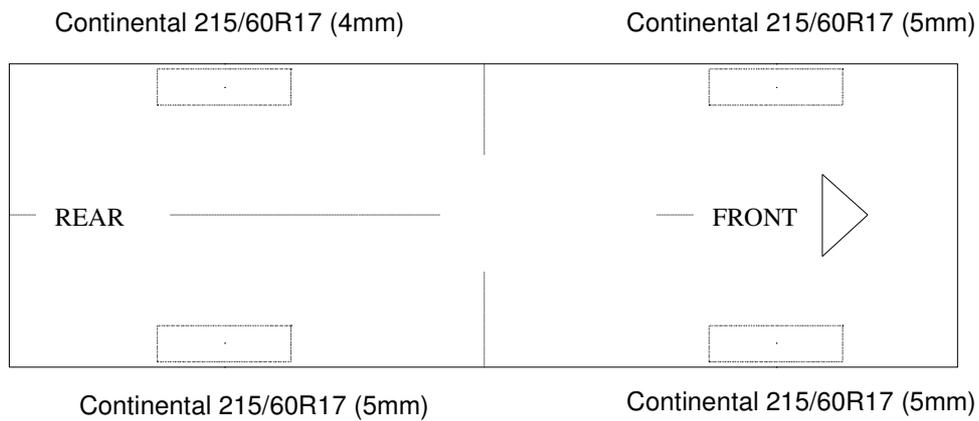
**General Condition**

4. The mileage of the Motor Car at the time of our inspection was 26, 090km.
5. The Motor Car had sustained relatively moderate impact damage that was confined to its frontal portion. Its front bumper was observed to be dislodged; its front bonnet as well as right front fender was observed to have been dented while its right headlight was observed to be cracked.

**Tyres and Wheel Rims**

6. The front right, rear left and rear right tyres and wheel rims were all found to be intact. These 3 tyres were observed to be in serviceable condition with remaining tread depth of approximately 5mm each. These tyres were also observed to be wrapped around wheel rims that were relatively undamaged.

7. We observed a cut/tear on the outer sidewall of the front left tyre. The remaining tread depth of this tyre was approximately 5mm, similar to the other 3 tyres. We had also found some relatively minor marks of grazing nature on the edges of the front left wheel rim. See photos 1 – 9 below.



**Photo 1** shows a general view of the rear body of the Motor Car at the time of our inspection. The Motor Car was observed to be in good general condition except for some relatively moderate impact damage at its frontal portion. The mileage of the Motor Car was recorded to be 26, 090km.



**Photo 2** shows a general view of the front left body of the Motor Car at the time of our inspection. The Motor Car was observed to be in good general condition except for some relatively moderate impact damage at its frontal portion.



**Photo 3** shows a general view of the front right body of the Motor Car at the time of our inspection. We had observed relatively moderate impact damage that was confined to its frontal portion. Its front bumper was observed to be dislodged; its front bonnet as well as right front fender was observed to have been dented while its right headlight was observed to be cracked.



**Photo 4** shows a closer view of the dented front bonnet and left front fender (circled) as well as the cracked right headlight (arrowed) of the Motor Car at the time of our inspection.



**Photo 5** shows the condition of the front left tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 5mm.



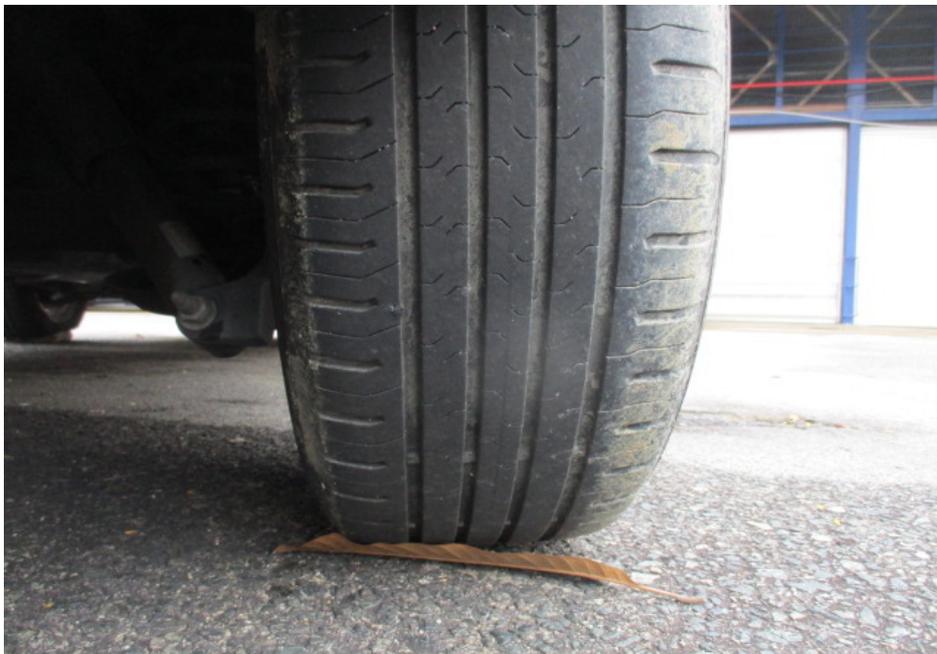
**Photo 6** shows the condition of the front left tyre of the Motor Car. We observed a cut/tear on the outer sidewall of the front left tyre. We had also found some relatively minor marks of grazing nature on the edges of the front left wheel rim (circled).



**Photo 7** shows the condition of the front right tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 5mm. The tyre, which was wrapped around alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.



**Photo 8** shows the condition of the rear left tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 4mm. The tyre, which was wrapped around an alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.



**Photo 9** shows the condition of the rear right tyre of the Motor Car, which was observed to be in serviceable condition with remaining tread depth of approximately 5mm. 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.

### **Engine Compartment & Operating Fluids**

8. Upon examination of the engine compartment of the Motor Car, we had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid was found to be of sufficient level for operating purposes. Visually, there was also no contamination found to the brake fluid. However we observed that the top portion of the engine oil dipstick had broken off hence we were unable to check on the engine oil. The reserve coolant reservoir was also found to be empty likely due to the accident.
9. Further examination of the engine compartment revealed no sign(s) or indication of fluid leakage and/or fluid stain within the engine compartment of the Motor Car.
10. Our subsequent checks on the underside of the Motor Car also revealed no fluid stains. Visually, the various undercarriage components of the Motor Car were all observed to be intact and without any visible damage. See photos 10 – 13 below.



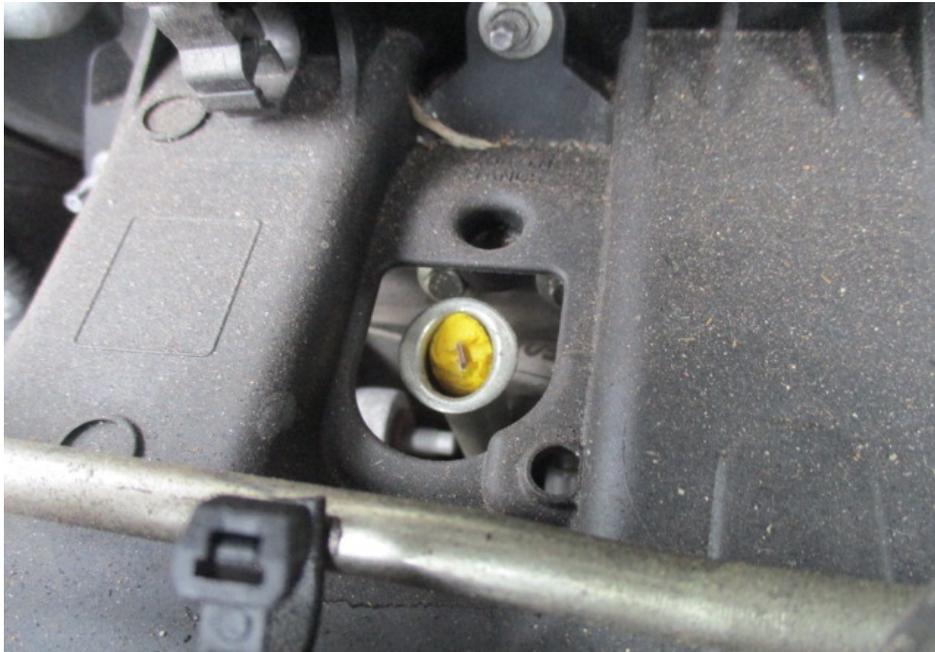
**Photo 10** shows a general view of the Motor Car's engine compartment. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment.



**Photo 11** shows the brake fluid reservoir of the Motor Car at the time of our inspection. The brake fluid was observed to be of sufficient level and without any visible contamination.



**Photo 12** shows checks being carried out to the engine coolant of the Motor Car at the time of our inspection. The reserve engine coolant reservoir was observed to be empty.



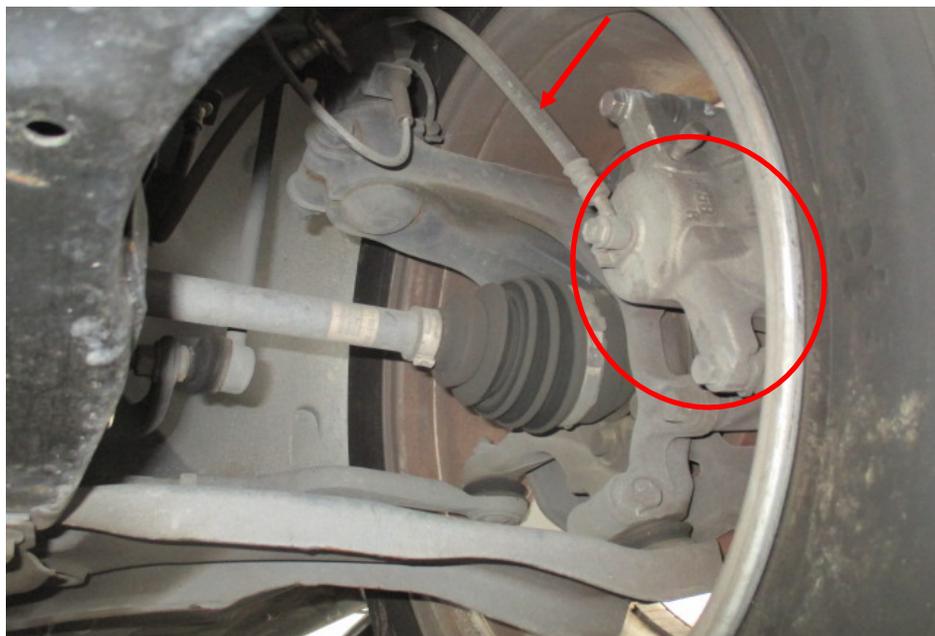
**Photo 13** shows the engine oil dip stick of the Motor Car at the time of our inspection. The top portion of the engine oil dipstick had broken off.

### **Braking System & Steering System**

11. Static brake tests conducted on the Motor Car revealed no abnormality. There was 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 Car. The braking system of the Motor Car 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. For this inspection, we were not able to conduct any tests on the steering system of the Motor Car due to the condition of the front left tyre. Our 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 photos 14 - 17 below.



**Photo 14** shows the brake hose/pipe (arrowed) at the rear left wheel of the Motor Car. We did not observe any leakage of brake fluid at the time of our inspection of the Motor Car. Static tests of the Motor Car's braking system had indicated that there was no internal leakage of pressure/vacuum. Hence the braking system was likely to be in serviceable condition at the material time of accident. The undercarriage components of the Motor Car were also all found to be intact and without any visible damage.



**Photo 15** shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Car. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake pedal etc. had revealed all to be intact and without visible damage.



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



**Photo 17** shows the various undercarriage components at the front left wheel of the Motor Car, which had included the steering tie rod (red arrow) and left drive shaft (yellow arrow). The various undercarriage components of the Motor Car were all found to be intact without any visible damage.

### **Electronic Safety / Warning Indicators**

13. The Motor Car's automatic self-test of the functionality of its various electronic operating systems like the Electronic Power Steering (EPS), Anti-Brake Lock System (ABS), Electronic Stability Control (ESC) and Supplemental Restraint System (SRS) 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. The master warning light had however remained illuminated after the self-test. See photos 18 & 19 below.



**Photo 18** shows the warning lights for the various electronic operating systems of the Motor Car appearing on its instrument panel during the self-test when the engine is cranked, in particular the EPS light, ABS light, ESC light and SRS light (arrowed).



**Photo 19** shows no warning lights illuminated on the instrument panel of the Motor Car after the engine was cranked. This would suggest that there was no abnormality to the various electronic operating systems of the Motor Car, like the ABS, EPS, ESC and SRS etc. The master warning light had however remained illuminated after the self-test (arrowed).

### **Operational Behaviour of the Motor Car**

14. Operational test to primarily determine whether there was any abnormality to the engine system, transmission system and braking system of the Motor Car could not be conducted given the extent of damage to the front left tyre.

### **Others**

15. The driver had stated there was a “Chassis Control Error” message displayed on the speedometer which resulted in a malfunction of the accelerator as well as the brakes which caused the accident. Our research revealed that this error message is a general warning which sometimes appears when the battery is low or when there is a wrong electronic signal transmitted to the vehicle’s Engine Control Module (ECM), for example a sudden downshift of transmission which does not correspond to the engine revolutions per minute (rpm). However this error message does not affect the driveability of the vehicle.

16. For this case, we are unable to conclusively determine whether the 'Chassis Control Error' message did appear before the accident.

### **Conclusion**

17. At the time of our inspection of the Motor Car, its steering system and braking system could not be tested due to the damage sustained to the Motor Car's front left tyre. However basing on our observations, it would appear that the steering system and braking system of the Motor Car were in serviceable condition. This is taking into consideration that all the various mechanical components were found to be intact and undamaged.

18. The observations gathered from our physical inspection of the Motor Car had indicated no evidence to suggest possible mechanical failure to the Motor Car that may have contributed to the accident.

19. The 4 tyres of the Motor Car were found to be in serviceable condition with remaining tread depth of approximately 5mm each. This had included the front left tyre where a cut/tear on its outer side wall area was observed. This cut/tear was a result of the accident and did not occur prior to the accident.

20. Our findings were based solely on a static and visual inspection of the Motor Car. No operational test could be carried out to the Motor Car given the extent of damage that it had sustained as a result of the accident.

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