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Your Ref: TP/IP/44541/2019
Our Ref : CI/TPD19013997/N

21 August 2019

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

MECHANICAL INSPECTION REPORT OF MOTORCYCLE FBG 4881H

1. We refer to your request on 5 August 2019 to conduct a physical inspection of a motorcycle bearing registration number FBG 4881H (herein referred to as **"Motorcycle"**), which was involved in a fatal road traffic accident on 17 July 2019.

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

3. Following the request, we had carried out a physical inspection of the Motorcycle on 21 August 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

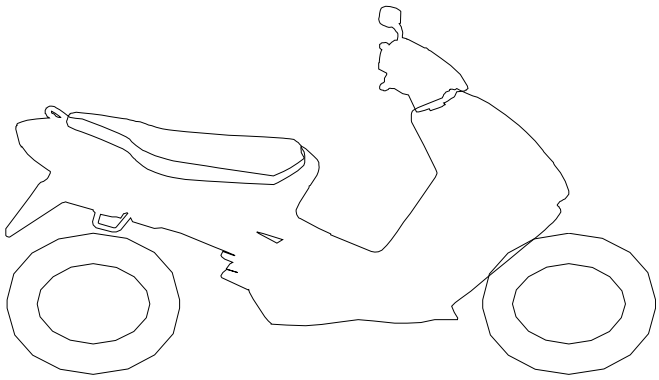
4. The mileage of the Motorcycle at the time of our inspection was not recorded due to the damage sustained to the speedometer display screen as a result of the accident.

5. The Motorcycle had sustained damages at its frontal portion and right body. Body parts that were found to have been damaged include its head cowling, speedometer gauge, right side mirror, front brake lever, petrol tank, radiator, right cowling, right frame cover, right rear frame slider, rear brake pedal, right front footrest, right swingarm spool, exhaust muffler and tail lamp, amongst others.

Tyres and Wheel Rims

6. The condition of the 2 tyres of the Motorcycle was observed to be in serviceable condition. We did not observe any tear, burst mark(s) and/or punctured hole(s) on the sidewalls as well as across the tread of the 2 tyres.

7. Both the tyres were observed to be sufficiently inflated for vehicular operation. The tyre brand, tyre size and remaining tread depth of the 2 tyres of the Motorcycle were recorded as follows:-



Pirelli 1200/55 R17 (3mm) Pirelli 120/70 R17 (3mm)

8. The 2 tyres were wrapped around alloy wheel rims. At the time of our inspection, we observed that the rear wheel rim of the Motorcycle was bent. We also found some relatively minor marks of grazing nature on the edges of the front wheel rim, at the right side of the Motorcycle. See photos 1 – 19 below.

Photo 1 shows a closer view of the speedometer gauge of the Motorcycle. The mileage of the Motorcycle was not recorded at the time of our inspection due to the damage sustained to the odometer display screen as a result of the accident (circled).

Photo 2 shows a general view of the frontal portion of the Motorcycle at the time of our inspection. The Motorcycle had sustained damages at its frontal portion and right body.

Photo 3 shows a general view of the right body of the Motorcycle at the time of our inspection. The Motorcycle had sustained damages at its frontal portion and right body. Body parts that were found to have been damaged include its head cowling, speedometer gauge, right side mirror, front brake lever, petrol tank, radiator, right cowling, right frame cover, right rear frame slider, rear brake pedal, right front footrest, right swingarm spool, exhaust muffler and tail lamp, amongst others.

Photo 4 shows a closer view of the radiator (arrowed) of the Motorcycle which had sustained damages as a result of the accident.

Photo 5 shows a closer view of the head cowling which was amongst the body parts at the front body of the Motorcycle that had sustained damage as a result of the accident.

Photo 6 shows a closer view of the cracked right frame cover of the Motorcycle which was amongst the body parts of the Motorcycle damaged as a result of the accident.

Photo 7 shows a closer view of the front brake lever (arrowed) and right side mirror (circled) which were amongst the body parts at the front body of the Motorcycle that had sustained damage as a result of the accident.

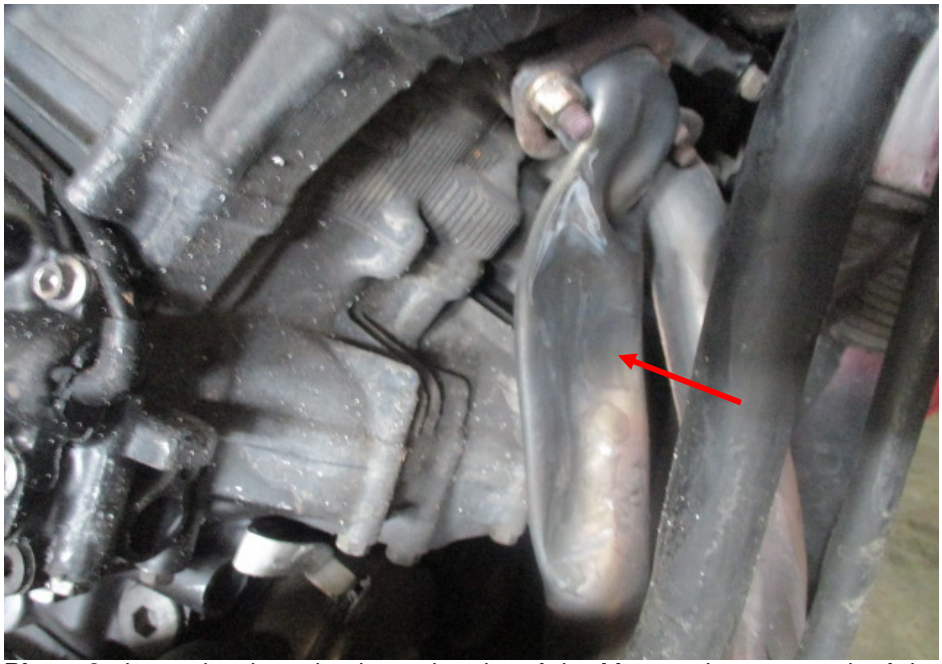


Photo 8 shows the dented exhaust header of the Motorcycle as a result of the accident (arrowed).

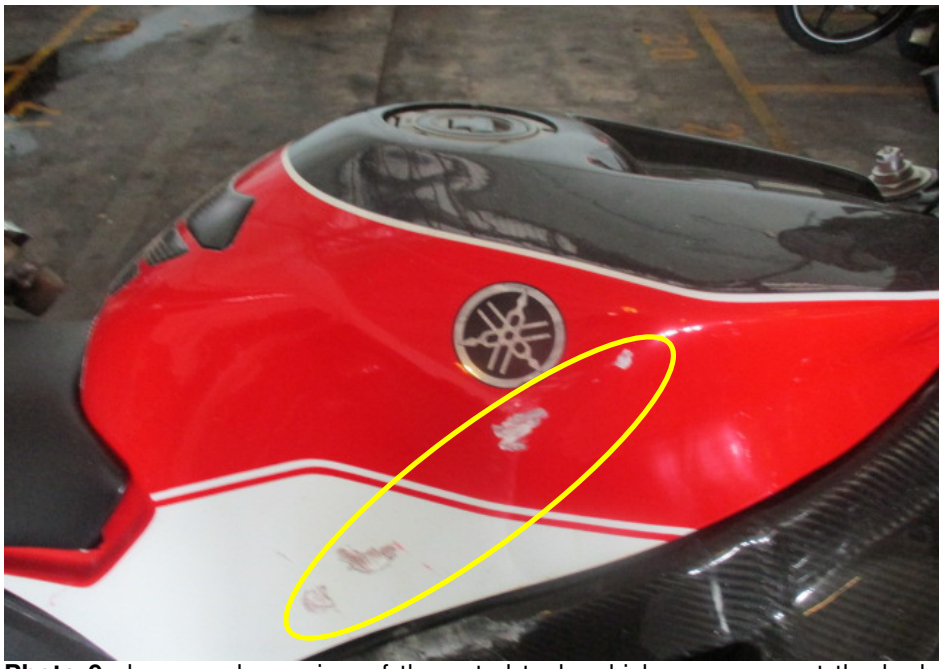


Photo 9 shows a closer view of the petrol tank, which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident (circled).

Photo 10 shows a closer view of the broken right cowling of the Motorcycle as a result of the accident.

Photo 11 shows a closer view of the right bottom cowling which was amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

Photo 12 shows a closer view of the right front footrest (circled) and rear brake pedal (arrowed) which were amongst the body parts of the Motorcycle that had sustained damage as a result of the accident.

Photo 13 shows a closer view of the right rear slider (arrowed) and swingarm spool (circled) which were amongst the body parts of the Motorcycle that had sustained damages of grazing nature as a result of the accident.

Photo 14 shows the broken tail lamp (circled) and dented exhaust muffler (arrowed) of the Motorcycle as a result of the accident.

Photo 15 shows the condition of the Motorcycle's front tyre. The front tyre was observed to be in serviceable condition with remaining tread depth of approximately 3mm. The tyre was also observed to be sufficiently inflated for vehicular operation. We did not observe any tear, burst mark(s) and/or punctured hole(s) on the sidewalls as well as across the tread of the front tyre.

Photo 16 shows the front wheel rim of the Motorcycle at the time of our inspection. Some relatively minor marks of grazing nature were observed on the edges of the front wheel rim (circled), at the right side of the Motorcycle.

Photo 17 shows the condition of the Motorcycle's rear tyre. The rear tyre was observed to be in serviceable condition with remaining tread depth of approximately 3mm. The tyre was also observed to be sufficiently inflated for vehicular operation. We did not observe any tear, burst mark(s) and/or punctured hole(s) on the sidewalls as well as across the tread of the rear tyre.

Photo 18 shows the bent rear wheel rim of the Motorcycle at the time of our inspection (circled).

Photo 19 shows a close up view of the bent rear wheel rim of the Motorcycle at the time of our inspection (arrowed).

Engine & Drive Train

9. Upon examination of the engine area of the Motorcycle, the various left engine components had sustained damage of grazing nature as a result of the accident however the engine components were still intact. There was also no fluid leak and/or fluid stain found around the left engine area of the Motorcycle. The various right engine components had also sustained damage of grazing nature as a result of the accident. Wet fluid stains were found on the underside of the damaged right engine cover of the Motorcycle as well as on the ground, indicating that a fluid leak had occurred as a result of the accident.

10. The gear chain of the Motorcycle, which rotates the rear wheel of the Motorcycle, was found to be in serviceable condition and without any misalignment. It was also adequately lubricated for operating purposes. See photos 20 – 24 below.

Photo 20 shows the left side of the engine of the Motorcycle at the time of our inspection. The various left engine components had sustained damage of grazing nature as a result of the accident (circled) however the engine components were still intact. There was also no fluid leak and/or fluid stain found around the left engine area of the Motorcycle.

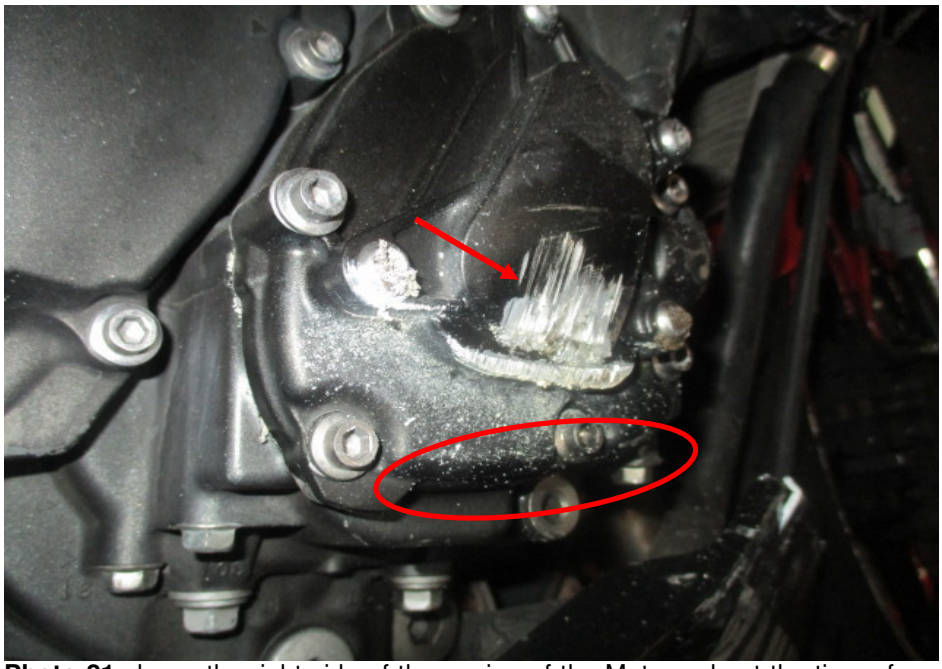


Photo 21 shows the right side of the engine of the Motorcycle at the time of our inspection. The various left engine components had sustained damage of grazing nature as a result of the accident (arrowed). Wet fluid stains were observed on the underside of the damaged right engine cover of the Motorcycle (circled).

Photo 22 shows wet fluid stains observed on the ground (circled) directly below the damaged right engine cover of the Motorcycle (arrowed), indicating that a fluid leak had occurred as a result of the accident.

Photo 23 shows the gear chain (arrowed) of the Motorcycle, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes. The gear chain rotates the rear wheel of the Motorcycle.

Photo 24 shows the closer view of the gear chain (arrowed) of the Motorcycle, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes.

Steering System & Braking System

11. Our checks on the various steering components of the Motorcycle revealed that its steering system was in serviceable condition. Its front fork bracket was observed to be intact and undamaged however the front fork outer tubes were found to be slightly dented as a result of the accident. Turning the handle bar towards the left did not produce any abnormal free play and/or resistance. We were unable to fully turn the handle bar towards the right due to the resistance from the broken components of the head cowling which were found to be pushed inwards as a result of the accident.

12. The braking system of the Motorcycle was observed to be of a full hydraulic type, where hydraulic (brake fluid) pressure controls the brake for the front wheel and rear wheel. The brake for the front wheel is engaged by pressing the brake lever at the right side of the Motorcycle's handle bar while the brake for the rear wheel is engaged by stepping on the brake pedal at the right side foot rest of the Motorcycle.

13. Our visual examination of the various components in the Motorcycle's braking system like the brake discs, brake calipers, brake lever, brake foot pedal and brake hoses revealed all to be intact and without damage. The brake fluid for the front brake and rear brake was also found to be of sufficiently level and without any contamination.

14. Static brake tests conducted on the Motorcycle had appear to indicate that the rear braking system of the Motorcycle was in serviceable condition. There was some resistance felt (spongy like feel) upon stepping on the rear brake pedal. This would indicate that there was no leakage of pressure/vacuum in the brake system.

15. Static brake tests conducted on the Motorcycle had appear to indicate that the front braking system of the Motorcycle was not in serviceable condition. There was no resistance felt (spongy like feel) upon pressing the front brake lever. This would indicate that there was a leakage of pressure/vacuum in the brake system. Upon closer examination of the front braking system, a leakage of brake fluid was observed from the right front brake banjo bolt when the front brake lever was depressed. The leakage of brake fluid from the front brake banjo bolt could have been due to the accident.

16. We subsequently carried out an operational test of the Motorcycle's rear braking system. This was done by manually pushing the Motorcycle forward and backward, simulating the Motorcycle in motion, and thereafter engaging the rear brake of the Motorcycle. At the end of the short operational test, we did not observe any abnormal behaviour of the Motorcycle's rear braking system. The rear wheel of the Motorcycle was able to stop rotating immediately upon stepping on the brake pedal.

17. In general, the observations gathered during the brake test had indicated that the rear braking system of the Motorcycle was in serviceable condition. See photos 25 – 34 below.

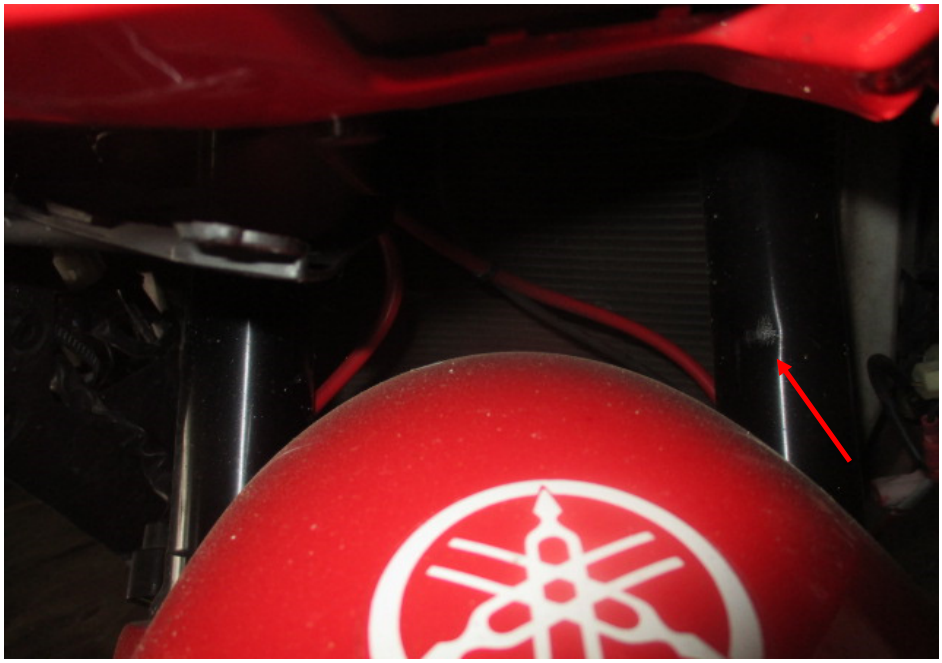


Photo 25 shows the front forks (arrowed) of the Motorcycle. The fork bracket of the Motorcycle was observed to be intact and undamaged. However the left outer fork tube was slightly dented as a result of the accident (arrowed).

Photo 26 shows the front forks (arrowed) of the Motorcycle. The fork bracket of the Motorcycle was observed to be intact and undamaged. However the right outer fork tube was slightly dented as a result of the accident (arrowed).

Photo 27 shows the front wheel of the Motorcycle turned slightly towards the right. We were unable to fully turn the handle bar towards the right due to the resistance from the broken components of the head cowling which were found to be pushed inwards as a result of the accident.

Photo 28 shows the front wheel of the Motorcycle turned towards its full left. Turning the Motorcycle's handle bar towards the left did not produce any abnormal free play and/or resistance. This would indicate that the steering system of the Motorcycle was in serviceable condition at the time of our inspection.

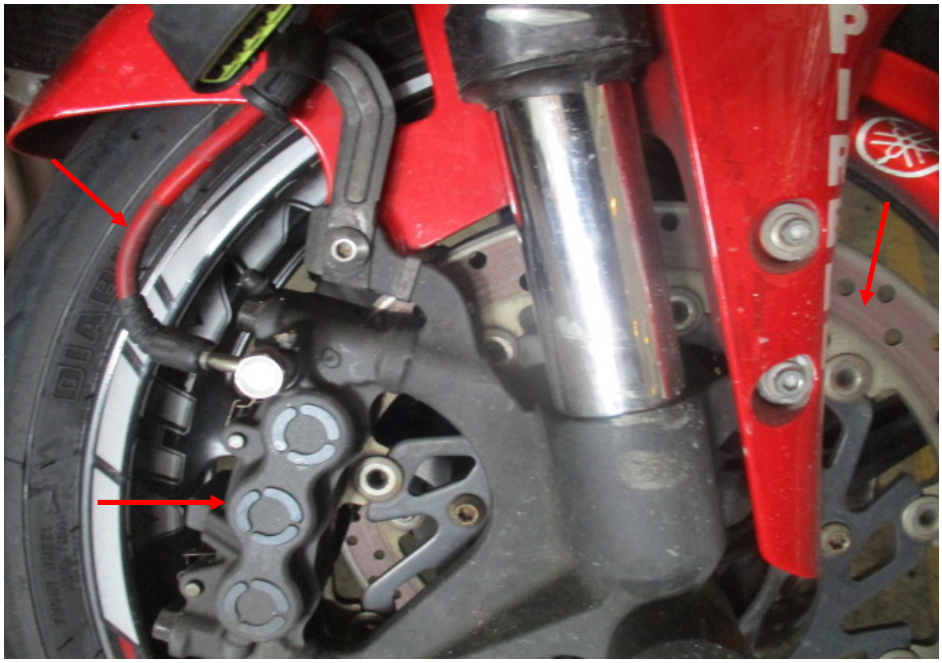


Photo 29 shows a close up view of the front brake caliper, front brake disc and front brake hose (arrowed) at the right side of the Motorcycle's front wheel, which are all part of the components in the hydraulic front brake system of the Motorcycle. Our visual checks of these various components had revealed all to be intact with no visible damage. No leakage of brake fluid was also observed.

Photo 30 shows a close up view of the front brake caliper, front brake disc and front brake hose (arrowed) at the left side of the Motorcycle's front wheel, which are all part of the components in the hydraulic front brake system of the Motorcycle. Our visual checks of these various components had revealed all to be intact with no visible damage. No leakage of brake fluid was also observed.

Photo 31 shows the front brake lever being depressed. There was no resistance felt (spongy like feel) upon pressing the front brake lever (arrowed). This would indicate that there is a leakage of pressure/vacuum in the brake system.

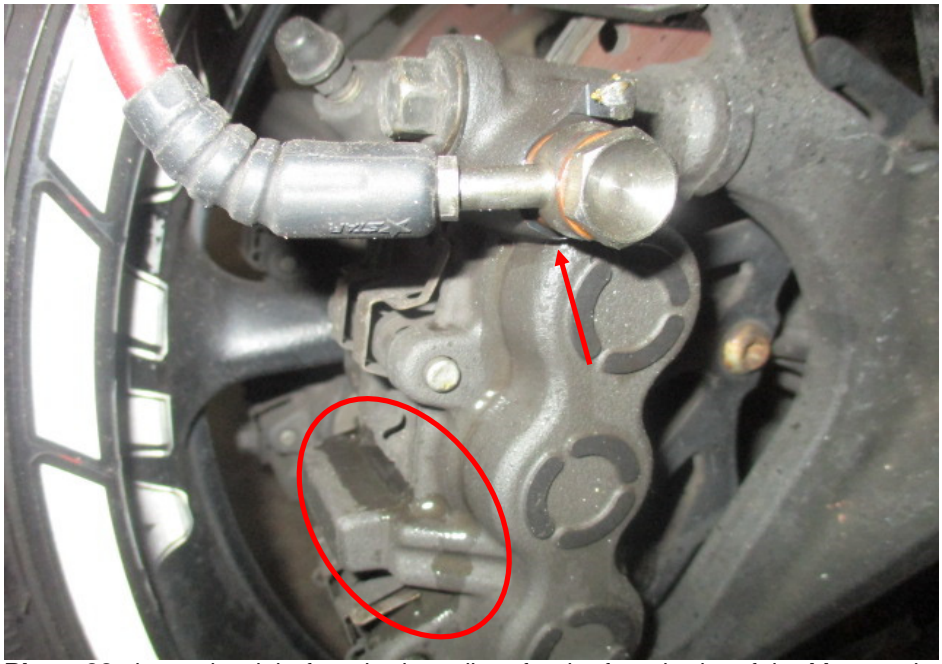


Photo 32 shows the right front brake caliper for the front brake of the Motorcycle. A leakage of brake fluid (circled) was observed from the right front brake banjo bolt (arrowed) when the front brake lever was depressed.

Photo 33 shows a close up view of the rear brake caliper, rear brake disc and rear brake hose (arrowed) of the Motorcycle, which are all part of the components in the hydraulic rear brake system of the Motorcycle. Our visual checks of these various components had revealed all to be intact with no visible damage. No leakage of brake fluid was also observed.

Photo 34 shows the brake fluid reservoir for the rear brake of the Motorcycle. The brake fluid was observed to be of sufficient level and without contamination for operational purposes.

Conclusion

18. Basing on our physical inspection of the Motorcycle, it appears that the steering system and rear braking system of the Motorcycle were all in serviceable condition. However, it appears that the front braking system of the Motorcycle was not in serviceable condition. We observed leakage of brake fluid from the front brake banjo bolt which could have been due to the accident.

19. The 2 tyres of the Motorcycle were 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 2 tyres. The 2 tyres were sufficiently inflated for vehicular operation with remaining tread depth of approximately 3mm each.

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