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Your Ref: TP/IP/14861/2021 31 May 2021
Our Ref : CI/TPD21005549/N

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

INSPECTION REPORT OF POWER ASSISTED BICYCLE PAB C255- TRAFFIC POLICE POUND REPORT NO. 1071/21

1. We refer to your request on 19 April 2021 to conduct a physical inspection of the Power- Assisted Bicycle bearing Traffic Police Pound Report no. 1071/21 (herein referred to as **"PAB"**), which was involved in a fatal road traffic accident on 23 March 2021.

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

3. Following the request, we had carried out a physical inspection of the PAB on 27 May 2021 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 PAB had sustained damages at its right body. The body parts that were found to have been damaged include its right hand brake lever, right handlebar end, right pedal and seat, amongst others as a result of the accident. See photos 1 - 10 below.

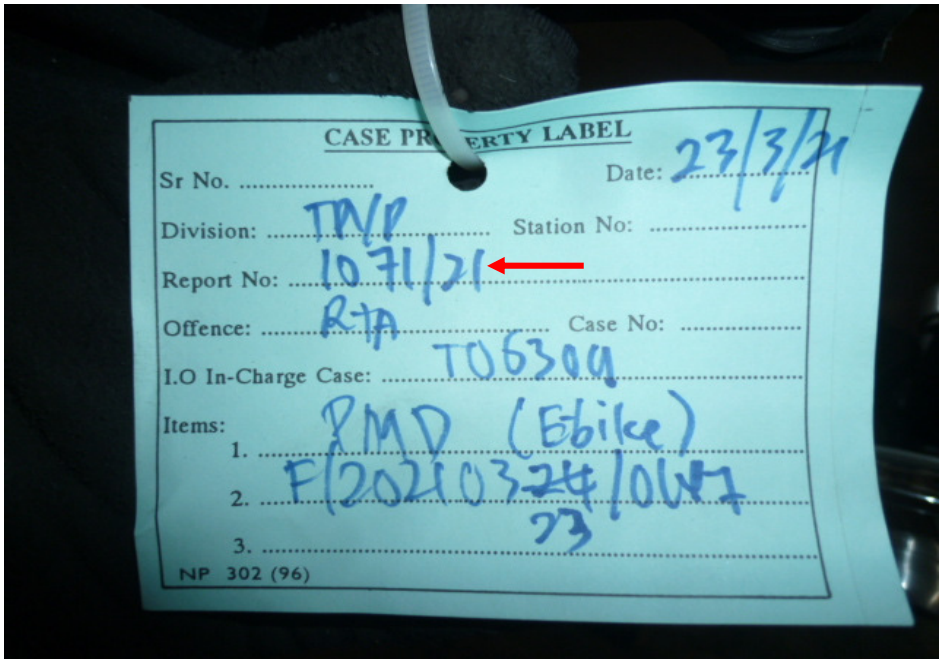


Photo 1 shows the identification of the PAB with reference to Traffic Police Pound Report No. 1071/21 (arrowed).

Photo 2 shows the frontal portion of the PAB at the time of our inspection. The PAB was observed to have sustained damages at its right body.

Photo 3 shows the right body of the PAB at the time of our inspection. The PAB was observed to have sustained damages at its right body.

Photo 4 shows the left body of the PAB at the time of our inspection. The PAB was observed to have sustained damages at its right body. The body parts that were found to have been damaged include its right hand brake lever, right handlebar end, right pedal and seat, amongst others as a result of the accident.

Photo 5 shows the rear portion of the PAB at the time of our inspection. The PAB was observed to have sustained damages at its right body. The body parts that were found to have been damaged include its right hand brake lever, right handlebar end, right pedal and seat, amongst others as a result of the accident.

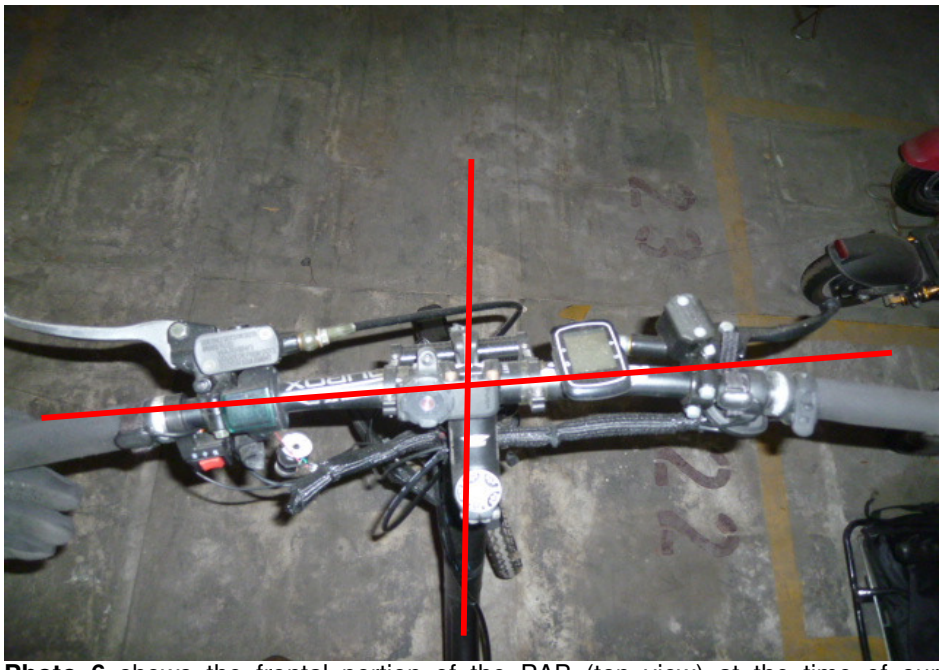


Photo 6 shows the frontal portion of the PAB (top view) at the time of our inspection. A slight misalignment of the handle bar & front tyre was observed.

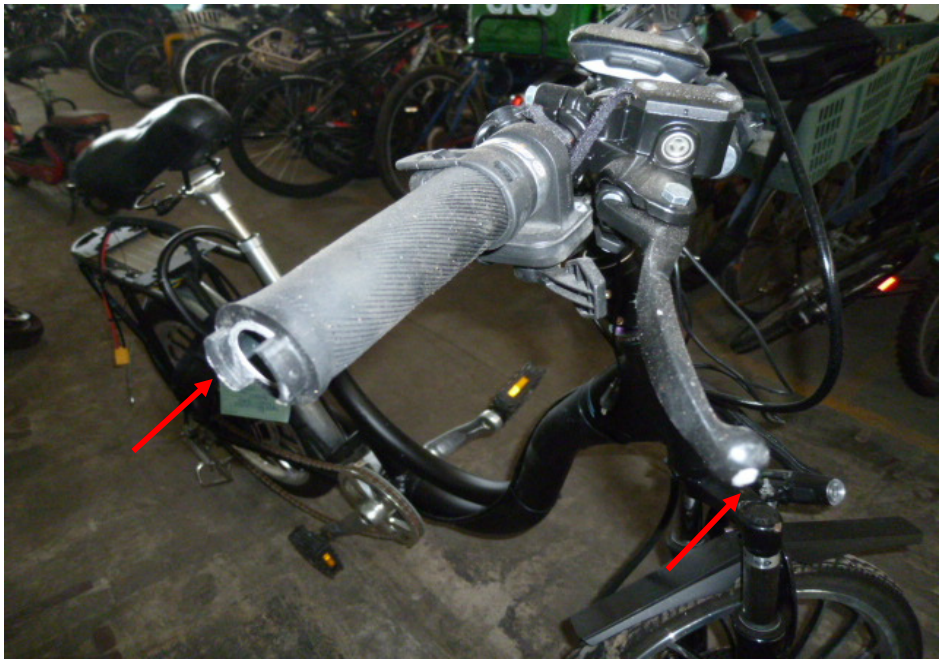


Photo 7 shows the damages on the right hand brake lever and right handlebar end (arrowed) of the PAB as a result of the accident.

Photo 8 shows the damages of grazing nature on the right pedal (arrowed) of the PAB as a result of the accident.

Photo 9 shows the torn seat (arrowed) of the PAB as a result of the accident.

Photo 10 shows the deformed rear mudguard (arrowed) of the PAB as a result of the accident.

Tyres and Wheel Rims

5. The condition of the PAB's 2 tyres was observed to be in serviceable condition. The tread pattern of the 2 tyres was clearly visible. 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. The 2 tyres were both observed to be sufficiently inflated for vehicular operation. The tyre brand, tyre size and remaining tread depth of the 2 tyres were recorded as follows:-

Kenda 20 X 1.75 / 47 – 406 (3mm)

Kenda 20 X 1.75 / 47 – 406 (3mm)

6. The tyres were wrapped around alloy wheel rims that were found to be without any significant damage. See photos 11 & 12 below.

Photo 11 shows the front tyre of the PAB at the time of our inspection. 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 12 shows the rear tyre of the PAB at the time of our inspection. 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.

Drive Motor

7. The PAB was controlled by a motor and gear train to drive the rear tyre. The motor was originally installed on the rear portion of the rear tyre & found adequately acceptable. The motor of the PAB was found to be intact without any misalignment or damages. It was also observed to be in operational condition. The gear train of the PAB was also found to be intact without any misalignment. It was also adequately lubricated for operating purposes. However the chain was observed to be dislodged from the gear train most likely as a result of the accident. See photos 13 - 15 below.

Photo 13 shows the general view of the drive motor (arrowed) of the PAB which was observed to be intact with no misalignment.

Photo 14 shows the general view of the gear train of the PAB, which was observed to be intact with no misalignment. It was also adequately lubricated for operating purposes. However the chain was observed to be dislodged from the gear train most likely as a result of the accident (arrowed).

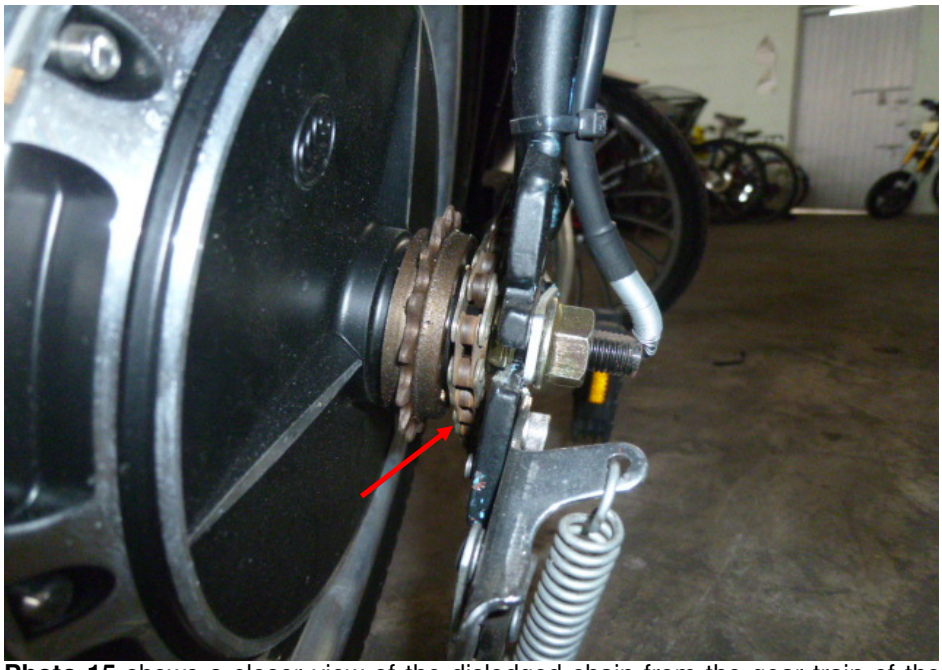


Photo 15 shows a closer view of the dislodged chain from the gear train of the PAB, most likely as a result of the accident. It was found to be adequately lubricated for operating purposes (arrowed).

Steering System & Braking System

8. For this case, we were not able to conduct any test(s) on the steering system of the PAB due to the damages to its steering stem. The steering stem was found to be bent as a result of the accident, causing the whole steering system to be out of alignment, hence rendering the PAB immobile for any static or operational tests.

9. The braking system of the PAB 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 PAB's handle bar while the brake for the rear wheel is engaged by pressing the brake lever at the left side of the PAB's handle bar.

10. Our visual examination of the various components in the PAB's braking system like the brake discs, brake calipers, brake levers and brake hoses revealed all to be intact and without damage. There was also no leakage of brake fluid observed along the brake hoses. This was from the respective brake fluid reservoirs to the front brake caliper and rear brake caliper of the PAB. The brake fluid for the front and rear brake was also found to be of sufficient level for operational purposes. However the brake fluid for the rear brake was observed to be slightly contaminated.

11. Static brake tests conducted on the PAB had appeared to indicate that the brake system of the PAB was in serviceable condition. There was some resistance felt (spongy like feel) upon pressing the left and right hand brake levers. This would indicate that there's no leakage of pressure/vacuum in the braking system.

12. For this case, we were not able to carry out any operational tests to the steering system and braking system of the PAB due to the damage of its steering stem, which had rendered the PAB immobile for the operational tests. We were not able to push the PAB manually forward and backward, simulating movement of the PAB, for the operational tests. See photos 16 – 22 below.

Photo 16 shows the steering stem of the PAB. The steering stem was found to be bent as a result of the accident (arrowed), causing the whole steering system to be out of alignment, hence rendering the PAB immobile for any static or operational tests.

Photo 17 shows a close up view of the front brake caliper, front brake disc and front brake hose (arrowed) of the PAB, which are all part of the components in the hydraulic front brake system of the PAB. 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 18 shows the brake fluid reservoir for the front brake of the PAB. The brake fluid was found to be without contamination and of sufficient level for operating purposes.

Photo 19 shows the front brake lever being depressed. There was some resistance felt (spongy like feel) upon pressing the front brake lever (arrowed). This would indicate that there is no leakage of pressure/vacuum in the front brake system.

Photo 20 shows a close up view of the rear brake caliper, rear brake disc and rear brake hose (arrowed) of the PAB, which are all part of the components in the hydraulic rear brake system of the PAB. 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 21 shows the brake fluid reservoir for the rear brake of the PAB. The brake fluid was observed to be of sufficient level for operating purposes. However it found to be slightly contaminated (arrowed).

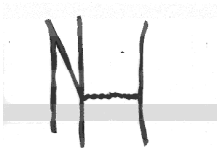
Photo 22 shows the rear brake lever being depressed. There was some resistance felt (spongy like feel) upon pressing the rear brake lever (arrowed). This would indicate that there is no leakage of pressure/vacuum in the rear brake system.

Conclusion

13. For this particular case, we were unable to determine whether there was any possible mechanical failure to the PAB that may have contributed to the accident. This was mainly due to the extent of damage that it had sustained. Its steering system was damaged as a result of the accident. The braking system of the PAB was found to be in serviceable condition.

14. The condition of the PAB's 2 tyres was observed to be in serviceable condition. The tread pattern of the 2 tyres was clearly visible. 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. The 2 tyres were both observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 3mm each.

15. Our findings were based solely on a static and visual inspection of the PAB. No operational test(s) could be carried out to the PAB due to the damage of its steering stem (as a result of the accident), which had rendered the PAB immobile.



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