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: 4181986396SG-003 22 January 2020
Our Ref : CI/AIG20001391/N

M/s AIG Asia Pacific Insurance Pte. Ltd.
78 Shenton Way #08-16
CHARTIS Building
Singapore 079120
(Motor Claims Department)

MECHANICAL INSPECTION REPORT OF MOTOR LORRY GBB 5739K

1. We refer to your request on 21 January 2020 to conduct a physical inspection of a motor lorry bearing registration number GBB 5739K (herein referred to as **"Motor Lorry"**), which was involved in a fatal road traffic accident.

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

3. Following the request, we had carried out a physical inspection of the Motor Lorry on 22 January 2020 at the premises of Tan Chong Motor located at 19 Ubi Road 4, Singapore 408623. We now set out below our observations and comments with respect to this inspection.

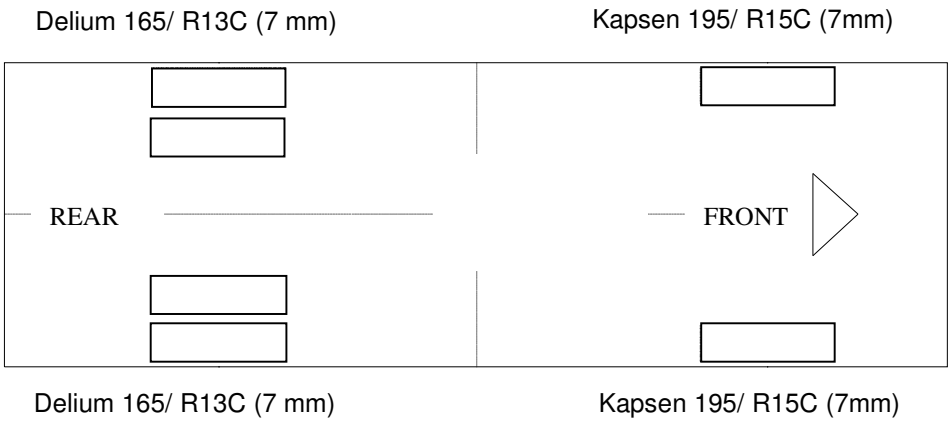
General Condition

4. The mileage of the Motor Lorry at the time of our inspection was 325, 126km.

5. The Motor Lorry appeared to have sustained moderate damage at its front portion. Its front windscreen, front right headlamp, left and right door panel were damage as a result of the accident at the time of our inspection.

Tyres and Wheel Rims

6. The 2 front tyres and 4 rear tyres of the Motor Lorry were observed to be in serviceable condition and sufficiently inflated for vehicular operation. We 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 6 tyres. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Motor Lorry were recorded as follows:-



7. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photos 1 – 11 below.

Photo 1 shows a general view of the instrument cluster of the Motor Lorry at the time of our inspection. The mileage of the Motor Lorry was 325,125km.

Photo 2 shows a general view of the Motor Lorry's front portion at the time of our inspection. Its front windscreen, front right headlamp, left and right door panel were damaged as a result of the accident at the time of our inspection.

Photo 3 shows a close up view of the front portion of the Motor Lorry at the time of our inspection. Its front windscreen was damaged as a result of the accident at the time of our inspection.

Photo 4 shows a close up view of the front portion of the Motor Lorry at the time of our inspection. Its front right headlamp and front right panel were damaged as a result of the accident at the time of our inspection (circled).

Photo 5 shows a close up view of the right front portion of the Motor Lorry at the time of our inspection. Its right front door panel was damaged as a result of the accident at the time of our inspection (circled).

Photo 6 shows a general view of the left front portion of the Motor Lorry at the time of our inspection. Its left front door panel had sustained damages of grazing nature as a result of the accident.

Photo 7 shows a general view of the rear portion body of the Motor Lorry at the time of our inspection. Its rear portion was observed to be intact and unaffected by the accident.

Photo 4 shows the condition of the front left tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 7mm. The tyre, which was wrapped around standard alloy 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 6 tyres that were fitted on the Motor Lorry.

Photo 5 shows the condition of the front right tyre of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 6mm. The tyre, which was wrapped around standard alloy wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 6 shows the condition of the rear left tyres of the Motor Lorry, which was observed to be in serviceable condition with remaining tread depth of approximately 7mm. The tyres, which were wrapped around standard alloy wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 6 alloy wheel rims of the Motor Lorry.

Photo 7 shows the condition of the rear right tyres of the Motor Lorry, which were observed to be in serviceable condition with remaining tread depth of approximately 7mm. 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 6 tyres that were fitted on the Motor Lorry.

Engine Compartment & Operating Fluids

8. Upon examination of the Motor Lorry's engine compartment, we had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. The brake fluid, engine oil, power steering fluid and engine coolant 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 no sign(s) or indication of fluid leakage and/or fluid stain within the engine compartment of the Motor Lorry.

10. Our subsequent checks on the underside of the Motor Lorry also revealed no fluid stain. Visually, the various undercarriage components of the Motor Lorry were all observed to be intact and without any visible damage. See photos 8 – 12 below.

Photo 8 shows a general view of the Motor Lorry's engine compartment, which was accessed by lifting the front passenger seat of the Motor Lorry. 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 (photograph shows the engine compartment as viewed from the left front side of the Motor Lorry).

Photo 9 shows the brake fluid reservoir of the Motor Lorry at the time of our inspection. The brake fluid was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 10 shows the engine coolant of the Motor Lorry at the time of our inspection. The engine coolant was observed to be of sufficient level and without any visible contamination.

Photo 15 shows the engine oil dipstick of the Motor Lorry at the time of my inspection. The engine oil was observed to be low but sufficient level for operation and without any visible contamination.

Photo 16 shows the undercarriage of the Motor Lorry, at the area where the engine housing and transmission housing are located. We observed minor old engine oil stains on the housing of the engine oil sump.

Steering System & Braking System

11. Static brake tests conducted on the Motor Lorry revealed abnormality. The brake booster had not responded well to the various tests conducted. There was abnormal movement of the brake pedal when it was depressed as the brake pedal when depressed felt hard and stiff. Suggesting that there was issue to the brake servo component in the braking system of the Motor Lorry at the time of accident. This was likely cause the Driver of the Motor Lorry unable to stop in time upon depressing on the brake pedal.

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

Photo 15 shows the various undercarriage components at the front right wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various steering components were all found to be intact, suggesting that the steering system of the Motor Lorry 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 16 shows the various undercarriage components at the front left wheel of the Motor Lorry, in particular the steering tie rod end (arrowed). The various undercarriage components of the Motor Lorry 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 13 shows the brake pipe (arrowed) at the rear right wheel of the Motor Lorry. We did not observe any leakage of brake fluid at the time of our inspection of the Motor Lorry. Our static tests of the Motor Lorry's braking system, along with our 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 Motor Lorry was likely to be in serviceable condition at the material time of accident.

Photo 20 shows the brake pipe (arrowed) at the rear left wheel of the Motor Lorry. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Lorry. My static tests of the Motor Lorry'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 Motor Lorry was likely to be in serviceable condition at the material time of accident.

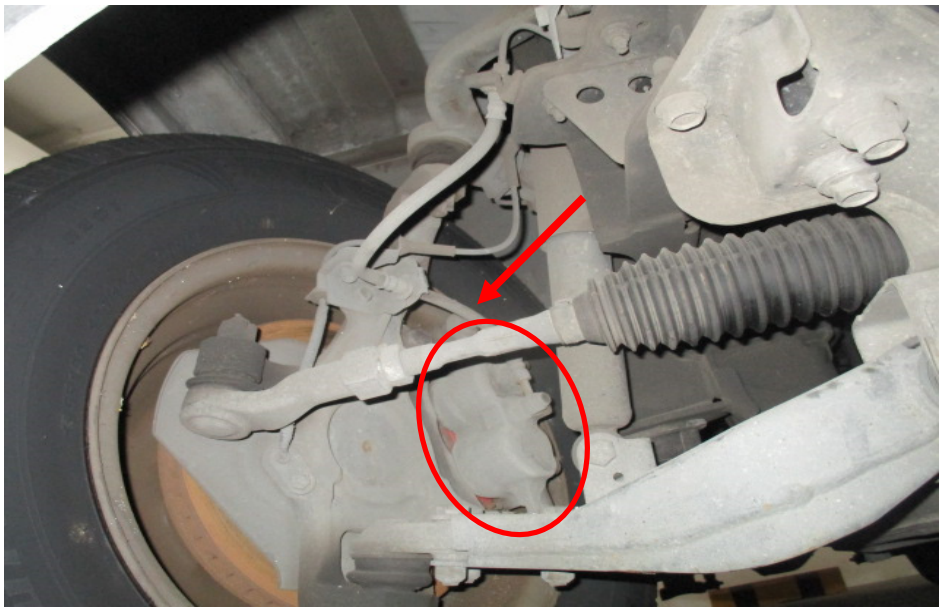


Photo 21 shows the brake hose/pipe (arrowed) at the front right wheel of the Motor Lorry. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without visible damage at the time of accident. There was also no sign of fluid stain(s) observed on the various undercarriage components.

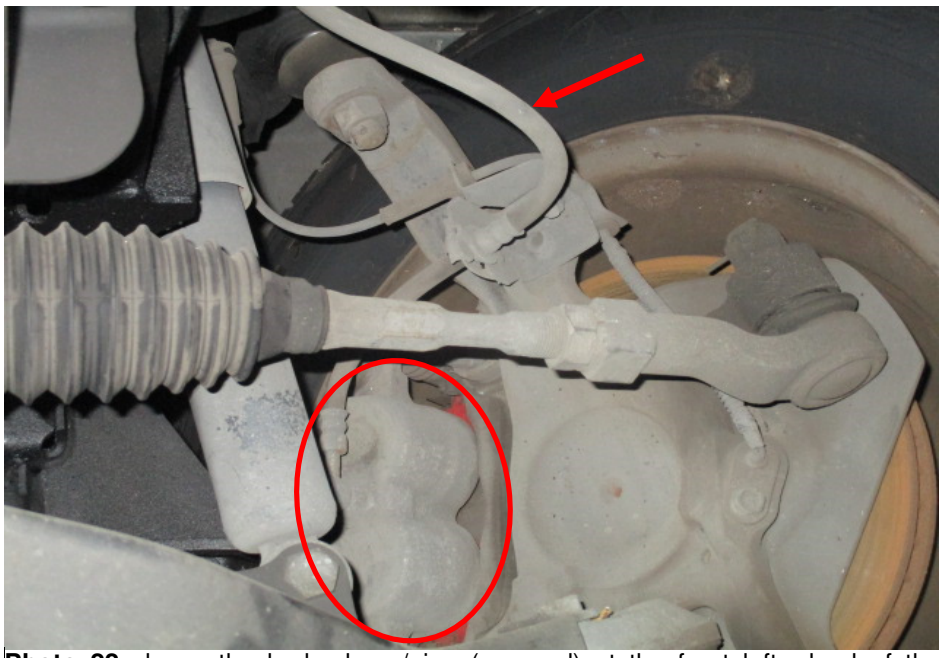


Photo 22 shows the brake hose/pipe (arrowed) at the front left wheel of the Motor Lorry. No leakage of brake fluid was observed. Visual examination of the various components of the braking system like the brake caliper (circled), brake booster, brake pedal etc had revealed all to be intact and without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

Photo 14 shows the front right wheel of the Motor Lorry turned to its full right. During our steering system test, we did not experience any abnormal free play and/or resistance when we had turned the steering wheel towards full left and full right. This would suggest that the steering system of the Motor Lorry was likely to be in serviceable condition at the material time of accident.

Photo 14 shows the front left wheel of the Motor Lorry turned to its full left. During our steering system test, we did not experience any abnormal free play and/or resistance when we had turned the steering wheel towards full left and full right. This would suggest that the steering system of the Motor Lorry was likely to be in serviceable condition at the material time of accident.

Electronic Safety / Warning Indicators

13. The Motor Lorry automatic self-test of the functionality of its various electronic operating system like the Anti-Lock Brake System (ABS during cranking of the engine had indicated that these 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 & 32 below.

Photo 24 shows the warning light for the Anti-Lock Brake System (ABS) (arrowed) appearing on the instrument panel of the Motor Lorry during the self-test of its various electronic operating system when its engine was cranked.

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

Operational Behaviour of the Motor Lorry

14. A short operational test of the Motor Lorry, 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 Motor Lorry forward, stopping, before reversing and coming to a stop again.

15. During the operational test, the various transmission gears of the Motor Lorry were able to be engaged without any difficulty by stepping on the clutch pedal and manually shifting the gear lever. There were no abnormal sounds heard and/or abnormal behaviour of the Motor Lorry's engine system. It was able to move forward and backward normally. Refer to photo 2 & 23 above.

16. The braking system was tested to be in abnormal condition, during static and operational test, when depressing of the brake pedal it felt hard and stiff and required high pedal effort to bring the Motor Lorry to a complete stop suggesting a mechanical fault in the braking system of the Motor Lorry.

Interview Summary of the Driver of the Motor Lorry

1. We interviewed the driver of the Motor Lorry, Mr Mutharasu Shanmugaganesh (herein referred to as **"Mr Muthu"**). He was able to relate the circumstances of the accident to the best of his recollection.

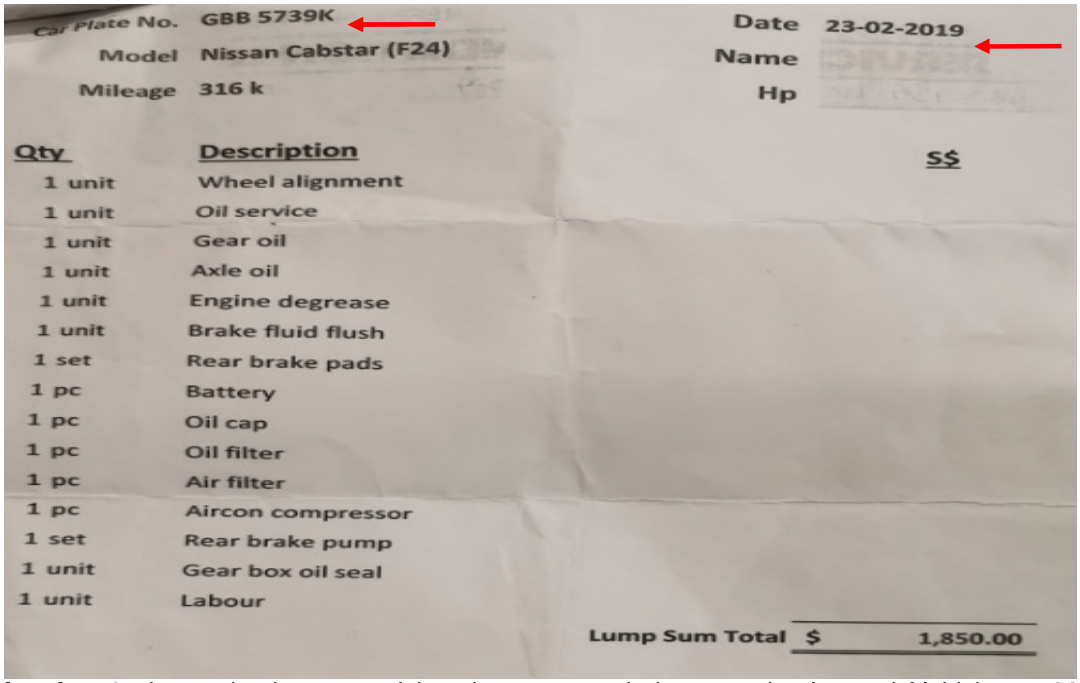
2. According to Mr Muthu, the accident had occurred on 25 May 2019 at 1650 hours as he was driving towards Chinatown. Mr Muthu works for MPR International Pte. Ltd. (herein referred to as **"MPR"**) which is a construction-based company. On the day of the accident, he had collected the Motor Lorry and went to Changi Airport for an assignment. The traffic was moderate, weather was clear and the road surface was dry. He mentioned that he was headed to Chinatown for another assignment. He travelled via the ECP. As he approached the cross junction of Marina Bay Financial Centre Tower 3, the traffic light turned red. Mr Muthu stepped on the brakes but could not stop the Motor Lorry. The Motor Lorry passed the stop line and travelled straight when it was hit on the right side by an oncoming car. The impact caused the Motor Lorry to fall on its left side. Mr Muthu was conveyed to the Singapore General Hospital. He was discharged on the same day and was given 4 days of medical leave.

3. Mr Muthu informed us that before the accident, he did not experience any abnormality to the Motor Lorry. The steering system and braking system were working fine before the accident.

4. Mr Muthu mentioned that he did not consume any alcohol or medication that may cause drowsiness and could impair his ability to drive on the day of the accident.

5. Regarding the accident, Mr Muthu has no witness to offer. There was also no in- vehicle recording device installed onto the Motor Lorry at the time the accident occurred.

6. Mr Muthu mentioned that the servicing of the Motor Lorry was handled by the boss of MPR. We were able to obtain a tax invoice showing the latest servicing and repairs that were carried out to the Insured Vehicle on 23 February 2019. The servicing package had included changing the engine oil, gear oil, axle oil, oil filter, air filter, aircon compressor, rear brake pump and gear box oil seal. The oil cap, rear brake pads and battery were replaced. The engine was degreased and the brake fluid was flushed. See Invoice 1 below.



Car Plate No. GBB 5739K
Model Nissan Cabstar (F24)
Mileage 316 k

Date 23-02-2019
Name
Hp

Qty	Description	S$
1 unit	Wheel alignment	
1 unit	Oil service	
1 unit	Gear oil	
1 unit	Axle oil	
1 unit	Engine degrease	
1 unit	Brake fluid flush	
1 set	Rear brake pads	
1 pc	Battery	
1 pc	Oil cap	
1 pc	Oil filter	
1 pc	Air filter	
1 pc	Aircon compressor	
1 set	Rear brake pump	
1 unit	Gear box oil seal	
1 unit	Labour	

Lump Sum Total $ 1,850.00

Invoice 1 shows the latest servicing that was carried out to the Insured Vehicle on 23 February 2019 (arrowed). The servicing package had included changing the engine oil, gear oil, axle oil, oil filter, air filter, aircon compressor, rear brake pump and gear box oil seal. The oil cap, rear brake pads and battery were replaced. The engine was degreased and the brake fluid was flushed.

Conclusion

17. From our physical inspection of the Motor Lorry, it appears that its engine system, transmission system, steering system were all in serviceable condition. However we had found the braking system to be in an inefficient conduct which may have caused and/or contributed to the accident.

18. A short operational test of the Motor Lorry, which we had conducted, revealed a longer stopping distance and effort to bring the Motor Lorry to a complete stop.

19. The 2 front tyres and 4 rear tyres fitted on the Motor Lorry were also found to be in serviceable condition. We 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 6 tyres. The 6 tyres were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 3mm each.

Muhd Nazril
Senior Technical Investigator

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