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: A/20230131/0013
Our Ref : CI/SPF23002890/P

20th March 2023

Lee Jun Hao
Central Police Division
Singapore Police Force
Police Cantonment Complex
Singapore 088762

MECHANICAL INSPECTION REPORT OF PRIME MOVER XE 745Z

1. I refer to your request on 8th February 2023 to conduct a physical inspection of an Prime Mover bearing registration number XE 745Z (herein referred to as "**Prime Mover**"), which was involved in a accident on 31st January 2023.

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

3. Following the request, I had carried out a visual inspection of the Prime Mover on 1st February 2023 at the premises of 124 Brani Terminal Ave. I now set out below my observations and comments with respect to this inspection.

General Condition

4. The mileage of the Prime Mover at the time of my inspection was not recorded. As the Prime Mover was unable to be started up.

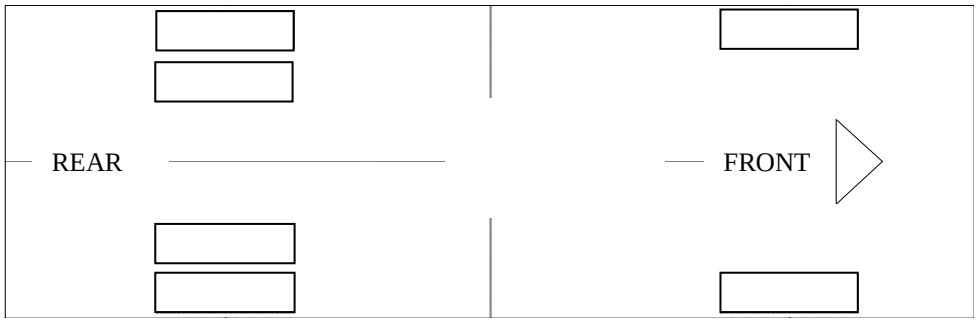
5. The Prime Mover was observed to have sustained damage at its front, right and rear portion. Its front windscreen, rear right wheel panel were amongst the body parts and various engine components were also damaged as a result of the accident. This Trailer Bed had also sustained damages to both its front support stands as a result of the accident.

Tyres and Wheel Rims

6. The 6 tyres of the Prime Mover and 12 tyres of the Trailer Bed were observed to be in serviceable condition and sufficiently inflated for vehicular operation. 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 6 tyres of the Prime Mover and 12 tyres of the Trailer Bed. The tyre brand, tyre size and remaining tread depth of the 6 tyres of the Prime Mover and 12 tyres of the Trailer Bed were recorded as follows:-

Prime Mover

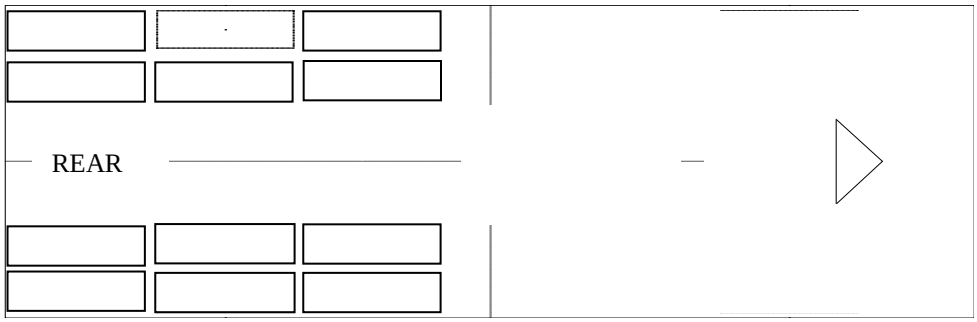
Maxzez 315/80R22.5 (11.2mm) Proload 315/80R22.5 (12.7mm)



Frideric 315/80R22.5 (13.4mm) Proload 315/80R22.5 (12.5mm)

Trailer Bed

Maxzez 315/80R22.5 (10.2mm)



Maxzez 315/80R22.5 (10.2mm)

7. The 6 tyres of the Prime Mover and 12 tyres of the Trailer Bed were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See photo 1 – 18 below.

Photo 1 shows a general view of the rear body of the Prime Mover at the time of my inspection. The Prime Mover was observed to have sustained damage at its rear portion. Its rear right wheel panel were amongst the body parts that were damaged as a result of the accident.

Photo 2 shows a close up view of the rear body of the Prime Mover at the time of my inspection. The Prime Mover was observed to have sustained damage at its rear portion. Its rear right wheel panel (circled) were amongst the body parts that were damaged as a result of the accident.

Photo 3 shows a general view of the front body of the Prime Mover at the time of my inspection. The Prime Mover was observed to have sustained damage at its front portion. Its front windscreen, were amongst the body parts that were damaged as a result of the accident.

Photo 4 shows the close up view of the Prime Mover front body at the time of my inspection. The Prime Mover was observed to have sustained damage at its front windscreen (circled), as a result of the accident.

Photo 5 shows a general view of the right body of the Prime Mover at the time of my inspection, it was observed to have been unaffected by the accident.

Photo 6 shows a general view of the left body of the Prime Mover at the time of my inspection, it was observed to have been unaffected by the accident.

Photo 7 shows the condition of the front right tyre of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 12.5 mm. The tyre, which was wrapped around standard steel 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 Prime Mover.

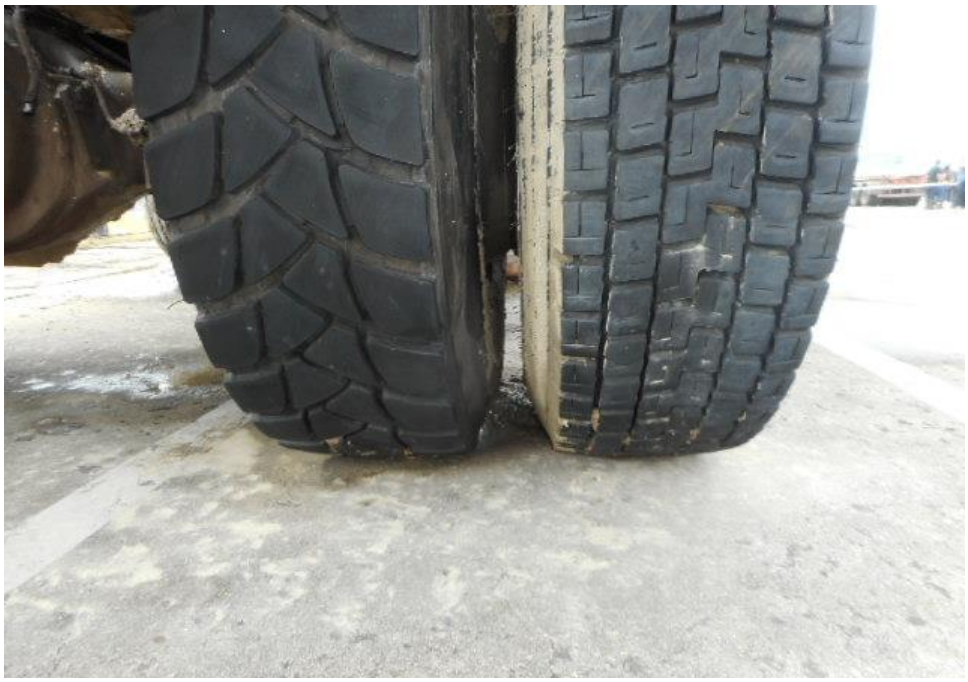


Photo 8 shows the condition of the rear right tyre of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 13.4mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

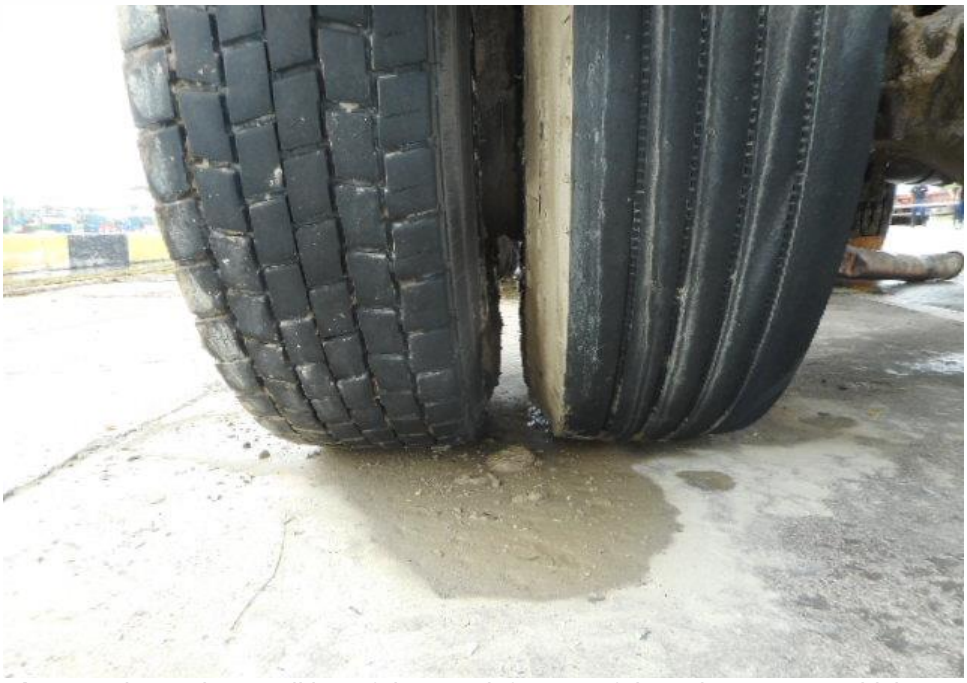


Photo 9 shows the condition of the rear left tyres of the Prime Mover, which was observed to be in serviceable condition with remaining tread depth of approximately 11.2mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 6 steel wheel rims of the Prime Mover.

Photo 10 shows the condition of the front left tyres of the Prime Mover, which were observed to be in serviceable condition with remaining tread depth of approximately 12.7mm. 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 Prime Mover.

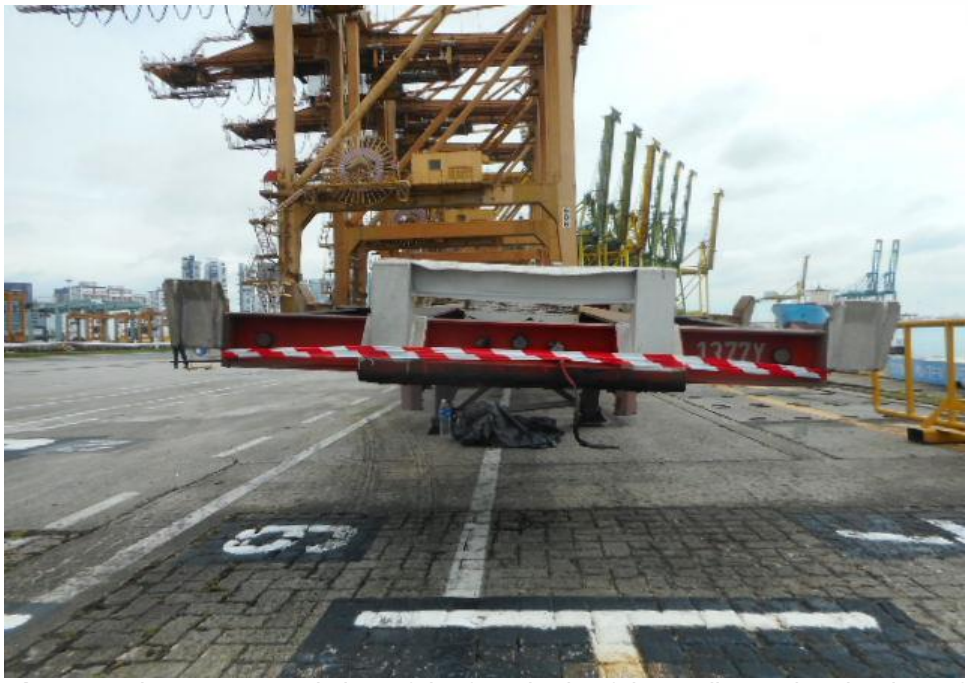


Photo 11 shows a general view of the front body of the Trailer Bed at the time of my inspection. The front Trailer Bed was observed to be intact and unaffected by the accident.

Photo 12 shows a general view of the right body of the Trailer Bed at the time of my inspection. The right support stand of the Trailer Bed was observed to be damaged as a result of the accident.

Photo 13 shows a close up view of the right body of the Trailer Bed at the time of my inspection. The right support stand (circled) of the Trailer Bed was observed to be damaged as a result of the accident.

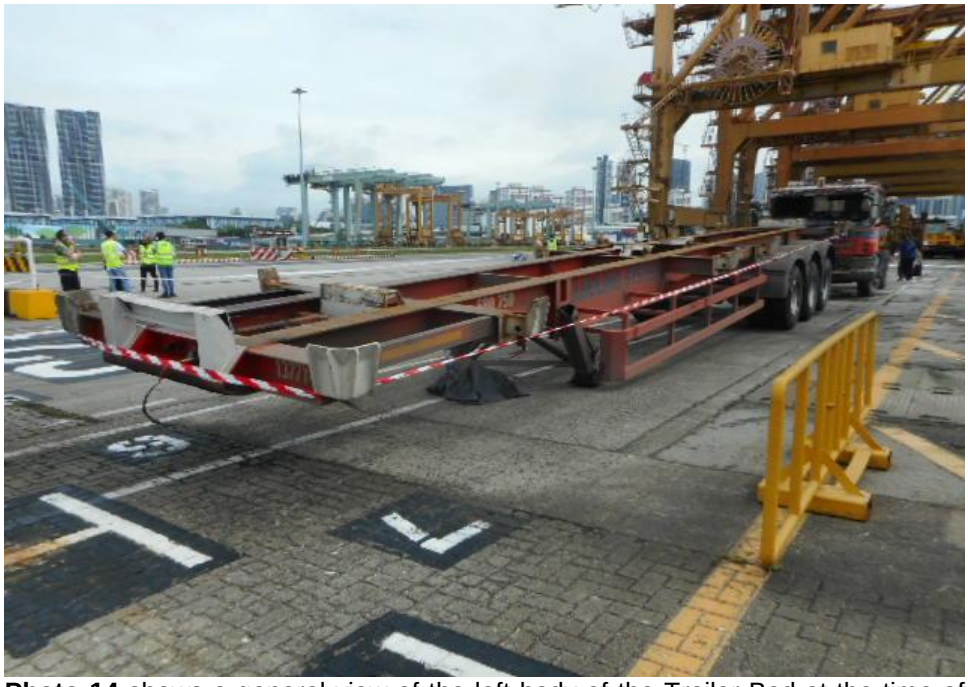


Photo 14 shows a general view of the left body of the Trailer Bed at the time of my inspection. The left support stand of the Trailer Bed was observed to be damaged as a result of the accident.

Photo 15 shows a close up view of the right body of the Trailer Bed at the time of my inspection. The right support stand (circled) of the Trailer Bed was observed to be damaged as a result of the accident.

Photo 16 shows a general view of the rear body of the Trailer Bed at the time of my inspection. The rear Trailer Bed was observed to be intact and unaffected by the accident.

Photo 17 shows the condition of the right tyres of the Trailer Bed, which was observed to be in serviceable condition with remaining tread depth of approximately 10.2mm. The tyre, which was wrapped around standard steel wheel rim, was also observed to be sufficiently inflated for vehicular operation.

Photo 18 shows the condition of the left tyres of the Trailer Bed, which was observed to be in serviceable condition with remaining tread depth of approximately 10.2mm. The tyres, which were wrapped around standard steel wheel rim, were also observed to be sufficiently inflated for vehicular operation. There was also no damage found on all 12 steel wheel rims of the Trailer Bed.

Engine Compartment & Operating Fluids

8. The examination of the Prime Mover's engine compartment, I had observed all the parts and components inside the engine compartment to be intact and unaffected by the accident. I have observed that the 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, there was no sign(s) or indication(s) of fresh fluid leakage and/or fluid stain within the engine compartment of the Prime Mover.

10. We further observed that the engine components located at the right rear portion of the Prime mover had sustained damages as a result of the accident. Its fuel tank and engine exhaust piping was damaged as a result of the accident.

11. My subsequent checks on the underside of the Prime Mover also revealed no fluid stain. Visually, the various undercarriage components of the Prime Mover were all observed to be intact and without any visible damage. See photo 19 – 26 below.

Photo 19 shows the general view of the Prime Mover's engine compartment, which was accessed by lifting the front cabin of the Prime Mover. 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

Photo 20 shows checks being carried out to the engine oil of the Prime Mover at the time of my inspection. The engine oil on the dipstick was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 21 shows checks being carried out to the power steering fluid of the Prime Mover at the time of my inspection. The power steering fluid on the dipstick was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 22 shows checks being carried out to the engine coolant of the Prime Mover at the time of my inspection. The engine coolant was observed to be of sufficient level (arrowed) and without any visible contamination.

Photo 23 shows a general view of the right rear portion of the Prime Mover at the time of my inspection. The engine components located at the right rear portion of the Prime Mover was observed to have sustained damage. Its fuel tank and engine exhaust piping was damaged as a result of the accident.

Photo 24 shows a close up view of the right rear portion of the Prime Mover at the time of my inspection. The engine components located at the right rear portion of the Prime Mover was observed to have sustained damage. Its fuel tank and engine exhaust piping was damaged as a result of the accident.

Photo 25 shows a close up view of the right rear portion of the Prime Mover at the time of my inspection. The engine components located at the right rear portion of the Prime Mover was observed to have sustained damage. Its fuel tank (arrowed) as a result of the accident.

Photo 26 shows a close up view of the rear right portion of the Prime Mover at the time of my inspection. The engine components located at the right rear portion of the Prime Mover was observed to have sustained damage. Its engine exhaust piping (arrowed) as a result of the accident.

Steering System & Braking System

12. The static brake and steering tests was unable to be conducted on the Prime Mover as these components requires the engine to be started. However, my visual examination of the braking and steering components, there was no sign(s) of air leakage along the brake hoses, brake pipes, air cylinders and of the various steering components which had included the steering box, tie rods, tie rod ends and ball joints had revealed that these components were all generally intact without damage. See photos 27 - 29 below.

Photo 27 shows the various undercarriage components at the front right wheel of the Prime Mover, 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 Prime Mover 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 28 shows the various undercarriage components at the front left wheel of the Prime Mover, in particular the steering tie rod end (arrowed). The various undercarriage components of the Prime Mover 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.

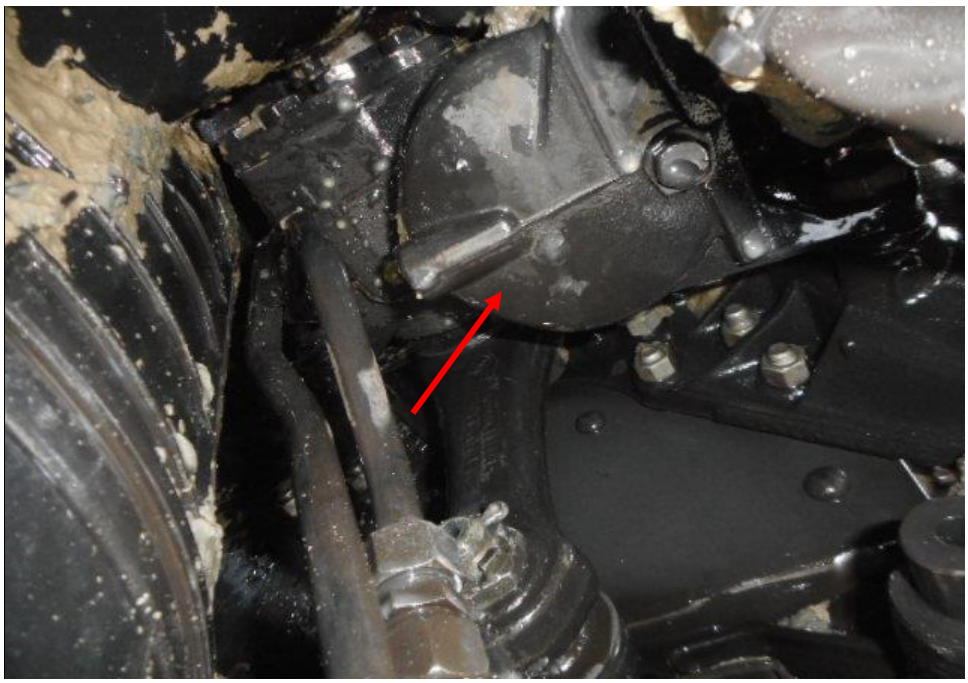


Photo 29 shows the steering box component (arrowed) at the undercarriage of the Prime Mover was found to be intact without any visible damage. There was also no sign of fluid stain(s) observed on the various undercarriage components.

13. The braking system of the Prime Mover was noted to be of a full air-assisted braking system. Briefly, in this system, compressed air is used to press onto the brake shoes (for drum brakes) or onto the brake pads (for disc brakes), through the respective braking mechanism, thus slowing the rotation of the wheels.

14. Since the engine of the Prime Mover could not be started, I was not able to carry out test(s) on whether there was any leakage of compressed air that could have affected the braking efficiency of the Prime Mover and Trailer Bed. All the air pipes, air tanks and connecting valves had all appear to be intact and securely fitted upon my visual examination of these parts. See photo 30 - 36 below.

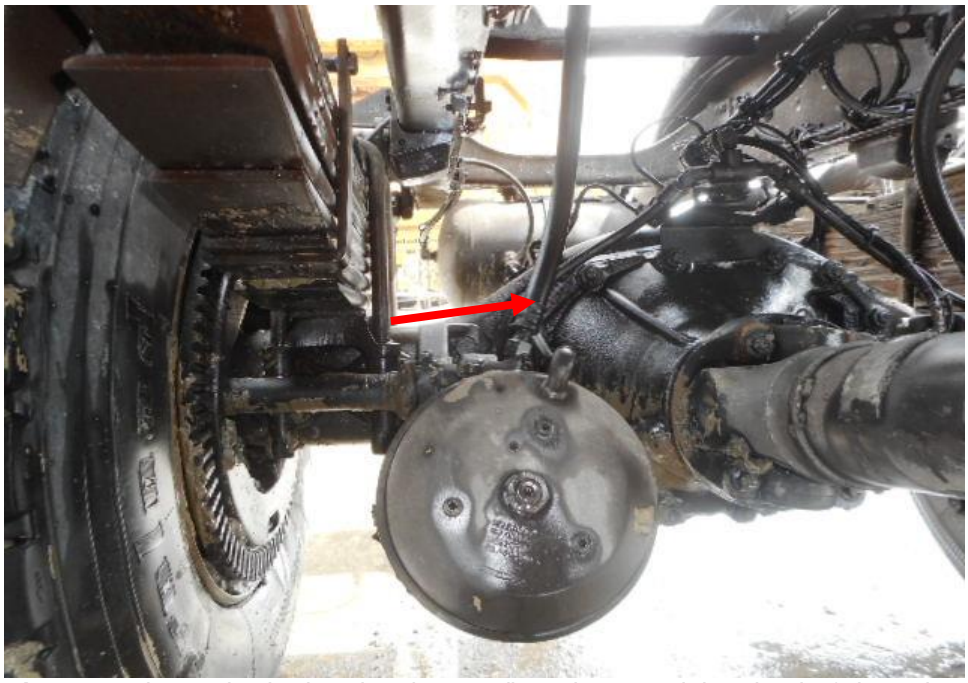


Photo 30 shows the brake pipe (arrowed) at the rear right wheel of the Prime Mover. I did not observe any leakage of air brake at the time of my inspection of the Prime Mover. My visual examination of the various mechanical components in the braking system components were generally intact.

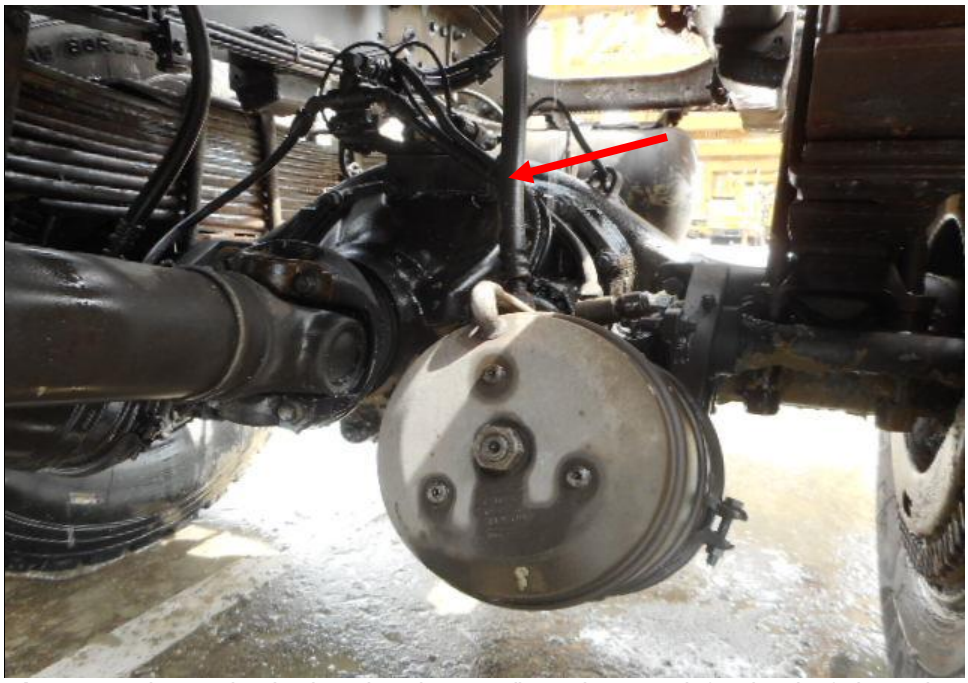


Photo 31 shows the brake pipe (arrowed) at the rear left wheel of the Prime Mover. I did not observe any leakage of air brake at the time of my inspection of the Prime Mover. My visual examination of the various mechanical components in the braking system components were generally intact.

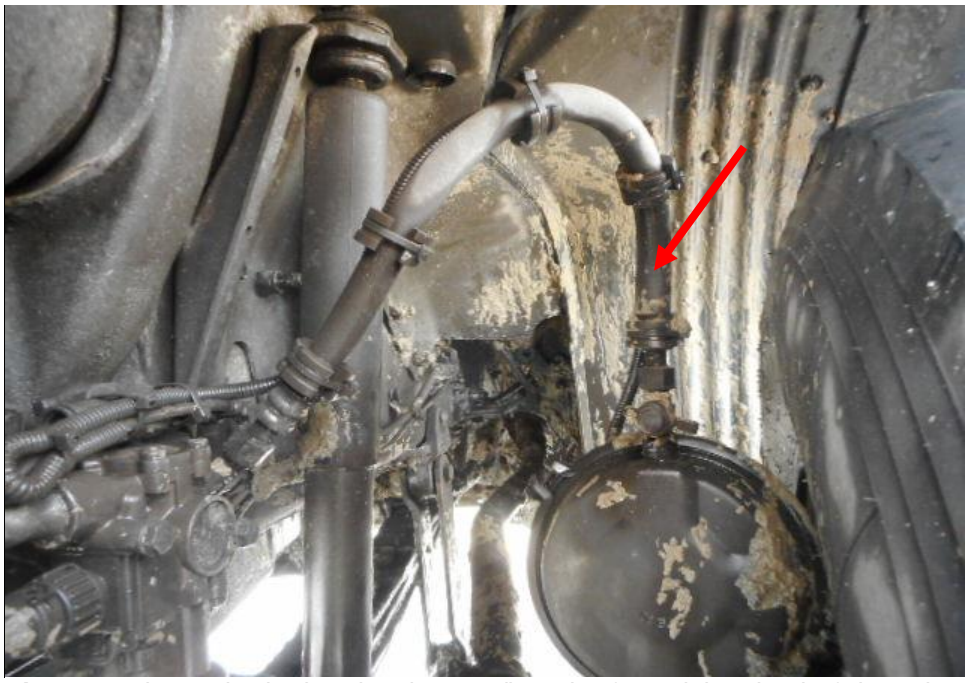


Photo 32 shows the brake pipe (arrowed) at the front right wheel of the Prime Mover. I did not observe any leakage of air brake at the time of my inspection of the Prime Mover. My visual examination of the various mechanical components in the braking system components were generally intact.

Photo 33 shows the brake pipe (arrowed) at the front left wheel of the Prime Mover. I did not observe any leakage of air brake at the time of my inspection of the Prime Mover. My visual examination of the various mechanical components in the braking system components were generally intact.

Photo 34 shows the air brake cylinders (arrowed) at the undercarriage of the Prime Mover. I did not observe any leakage of air brake at the time of my inspection of the Prime Mover. My visual examination of the various mechanical components in the braking system components were generally intact.

Photo 35 shows the brake pipe (arrowed) at the right wheels of the Trailer Bed. I did not observe any leakage of air brake at the time of my inspection of the Trailer Bed and the various mechanical components was observed to be intact.

Photo 36 shows the brake pipe (arrowed) at the left wheels of the Trailer Bed. I did not observe any leakage of air brake at the time of my inspection of the Trailer Bed and the various mechanical components was observed to be intact.

Electronic Safety / Warning Indicators

15. The automatic self-test of the functionality of its various electronic operating systems was not conducted as the Prime Mover was unable to be started up.

Operational Behaviour of the Prime Mover

16. As the engine of the Prime Mover was unable to be started up, I was hence not able to carry out any operational test(s) to primarily determine whether there was any operational abnormality to its engine system, transmission system, steering system and braking system.

Conclusion

17. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Prime Mover that may have contributed to the accident. The extent of damage that it had sustained to the fuel tank and exhaust piping had prevented me from Carrying out any operational test(s) and/or static test(s) to its engine system, transmission system, steering system, braking system and suspension system.

18. The 6 tyres fitted on the Prime Mover and 12 tyres on the Trailer Bed 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 Prime Mover 6 tyres and 12 tyres on the Trailer Bed. The 6 tyres of the Prime Mover and 12 tyres on the Trailer Bed were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 10.2mm – 13.4mm.

Sherwin Beh
Technical Investigator

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